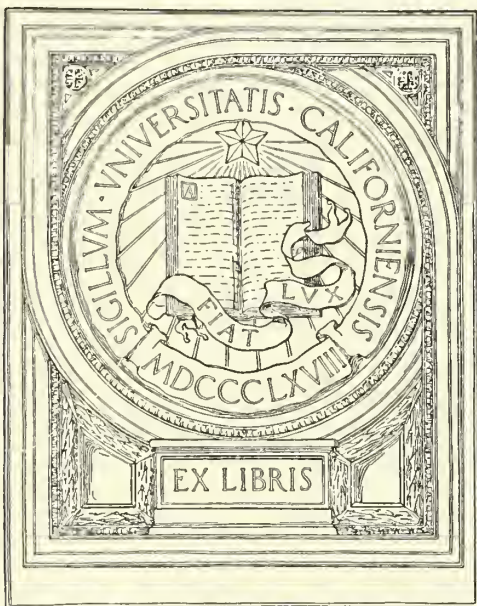



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MINNESOTA MEDICINE

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Number 1

PNEUMONIA IN MINNESOTA, WHAT CAN BE DONE ABOUT IT?*

LUCY S. HEATHMAN, Ph.D., M.D., O. McDANIEL, M.D., and A. J. CHESLEY, M.D.
Minneapolis

FOR a number of years, health authorities have looked with apprehension upon the deaths from pneumonia and influenza with pneumonia complications. Pneumonia ranks fourth as the cause of death in Minnesota and sixth in the United States. Because of lack of available data, the Division of Vital Statistics of the Minnesota Department of Health has been unable to compile separate figures for bronchial and lobar pneumonia until the past five years.

The following table shows the reported deaths from pneumonia in Minnesota for the past five years.

vided into four types, Types I, II, and III, each being an entity, and Group IV being made up of many different pneumococci, the characteristics of which were not well known. Twenty-nine different types of pneumococci have now been identified which formerly were included under Group IV. These organisms have been designated as Types IV, V, VI, et cetera, through XXXII.

Figures based on 9,639 cases collected from literature by Lord and Heffron¹ showed that Type I contributed 33 per cent of pneumococcus pneumonia; Type II, 23 per cent; Type III, 9

TABLE I. DEATHS DUE TO PNEUMONIA IN MINNESOTA
1931 to 1935 Inclusive

Year	Lobar Pneumonia		Bronchial Pneumonia		Pneumonia Unspecified		Pneumonia (All Forms)	
	Total	*Rate	Total	*Rate	Total	*Rate	Total	*Rate
1931	923	35.7	976	37.8	51	2.0	1,950	75.4
1932	876	33.7	1,003	38.6	34	1.3	1,913	73.7
1933	741	28.4	835	32.0	50	1.9	1,626	62.4
1934	1,195	45.6	1,046	39.9	25	.9	2,666	86.5
1935	1,107	42.1	902	34.3			**2,009	76.5

*Rate per 100,000 population.

**1935 total does not include Pneumonia Unspecified.

From the table one may assume that approximately 1,000 of the deaths per year were due to pneumococcus pneumonia as it is considered that 96 per cent of all lobar pneumonias and 3 to 5 per cent of bronchial pneumonias are caused by pneumococci. On this basis and considering that in large groups of cases† reported in the literature, it has been found that the fatality was 30 per cent, the number of cases of pneumococcus pneumonia in Minnesota would approximate 3,334 per year.

Pneumococcus pneumonias were formerly di-

per cent, and Types IV to XXXII, 35 per cent, and that 17.5 of the 35 per cent of cases caused by types classified as IV to XXXII were caused by Types V, VII, and VIII.

Therapeutic serums have been developed which are effective in varying degrees in the treatment of Types I, II, V, VII, and VIII, which constitute 73.5 per cent of all pneumococcus pneumonias.

Table II gives an estimate of the number of cases of lobar pneumonia for one year due to the various types, the probable death rate with and without serum and probable number of lives which might have been saved had typing service and serum been available.

*From the Minnesota Department of Health.

†See footnote, Table II.

TABLE II.

	Cases	Deaths Without Serum	*Percentage	Deaths With Serum	*Percentage	Lives Saved
Type I.....	1,100	275	25	121	11	154
Type II.....	767	314	41	207	27	107
Type III.....	300	126	42	126	No serum	0
Type V.....	167	35	20.8	13	7.5	22
Type VII.....	167	63	38	17	10	46
Type VIII.....	250	45	18	14	5.4	31
Other Types.....	583	142	24.4	142		
Total	3,334	1,000		640		360

*Massachusetts Studies, Lord and Heffron.
Cecil, Bellevue Hospital, N. Y.
Cole, Rockefeller Hospital.

Bullowa, Harlem Hospital.
Finland, Boston City Hospital.

From Table II it may be noted that approximately 30 per cent of deaths occur without the use of serum and 19.2 per cent in the serum treated group.

Five years ago, Massachusetts⁵ began a state-wide program of pneumonia control. More recently New York State,³ Connecticut,⁴ Maryland⁶ and Michigan⁷ have initiated a similar plan. The essential phases of these plans have been to give publicity on pneumonia to the people through the radio, to physicians through local addresses, to offer laboratory service through state laboratories and to furnish nursing care and serum for indigent cases at least.

The funds of the Minnesota Department of Health have been so limited that it has been impossible up to the present to offer any of these services. Through the allotment of Federal funds it is now possible to offer limited services to aid physicians in the diagnosis and treatment of the pneumonias to the end that morbidity and mortality may be reduced. In doing this the Department of Health asks the coöperation and aid of the family physicians.

Proposed Laboratory Work

Typing of pneumococcus is being done by some of the larger hospitals in Minnesota and a few physicians throughout the State are carrying out typing, using the Neufeld outfit put out by some of the commercial houses. It is proposed that the Minnesota Department of Health Laboratories carry out typing of sputum, using the Neufeld technic and checking this, at least for some time, with the mouse and Sabin methods. While the Neufeld technic is very accurate in experienced hands, according to several investigators, this technic requires at least six months

to one year of experience before it can be used proficiently. It is a direct method depending upon the swelling of the pneumococcus capsules upon the addition of specific antiserum. The great advantage of the Neufeld method over others (besides its low cost) is that an answer can usually be given to the physician in one-half to one hour after the sputum reaches the laboratory. Published data from the Massachusetts Department of Health Laboratories¹ show that correct typing may be carried out by this method in 94.6 per cent of Types I, II and III cases in which pneumococci are present in the sputum. In children and other patients who are not raising sputum it has been found by Bullowa in Types I and II cases that throat swabbings yield accurate results in 73 per cent of cases. The swab is incubated in broth two hours and the test then carried out. Experience has shown that typing can be done on properly collected sputum forty-eight hours after collection, but it has also been demonstrated that to be of definite value serum must be administered not later than four days after the onset of earliest symptoms of lobar pneumonia: cough, chill, rapid rise in temperature, and coincident pain in the side.

At a special meeting of the State Board of health, December 9, at which a member of the Council of the Minnesota State Medical Association was present, it was proposed that the Laboratories of the Division of Preventable Diseases of the State Department of Health offer pneumococcus typing for cases residing in areas in proximity to the Main and Branch Laboratories, and as soon as feasible extend this service further in the state. Preparation is already under way and it is expected that this service can be offered early in January, 1937. It is planned to

extend the work gradually by sending an experienced bacteriologist to various outlying districts to teach the Neufeld method of typing to technicians in local hospitals. In order that both the attending physician, the local laboratory, and the Minnesota Department of Health will have assurance that the results obtained are accurate, the Division of Preventable Disease will request that a sample of the sputum in each case be sent to the Main Laboratories so that the Neufeld test may be checked by the mouse method.

At the meeting mentioned above, it was also planned that a limited amount of Federal funds be allotted for the purchase of therapeutic pneumococcus serum for those unable to pay. Funds are not sufficient to make free serum available for all. This can be readily realized if one considers that there is an average of at least 1,000 deaths and an estimated 3,334 cases of lobar pneumonia in Minnesota each year.

As shown by figures above, 73.5 per cent of patients presumably can be helped by antiserum. Calculation from the above figures shows that 2,451 persons would supposedly be benefited by therapeutic serum. It has been shown by studies of large groups in this country and in England that an average of 80,000 units of serum should be given to the usual case without blood stream infection. At the prices now quoted boards of health, the minimum cost per patient would be \$36.00 and the total for 2,451 patients \$88,236.

In the early years of the Massachusetts pneumonia study one to two doses of bivalent Types I and II serum were given to a patient awaiting typing. This is still done in some New York City hospitals and is considered good medical

practice. However, in consideration of the fact that experienced pneumonia specialists question the wisdom of this practice on the grounds that the administration of non-specific serum may actually do harm, and in consideration of the lack of funds, the Minnesota State Department of Health proposes that serum should only be made available for patients whose sputum is typed.

In developing the services to be offered under the above plan it will be necessary to study the incidence of pneumonia in Minnesota in its various forms, lobar, bronchial, influenzal, et cetera, as well as the bacteriologic study of each case, including typing the organisms in cases caused by pneumococci. In addition, a definite educational program should be instituted, emphasizing the dangers of the common cold and upper respiratory infections, and the necessity for consulting the family physician at the earliest possible moment. It would appear that what has been accomplished in the reduction of diphtheria in Minnesota can be done at least to some extent in pneumonia through the concerted effort of the family physician with the Minnesota Department of Health.

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THE INCIDENCE OF PNEUMOCOCCUS TYPES IN MINNESOTA*

JOHN A. LAYNE, M.D., and HOBART A. REIMANN, M.D.

Minneapolis

THE proved value of specific immune anti-pneumococcus serum in the treatment of pneumococcus lobar pneumonia places a responsibility on the physician to provide his patient with the benefit of this form of therapy when necessary. Before serum can be used to advantage, however, it is absolutely necessary to

determine the type of pneumococcus causing the pneumonia. No convincing evidence has as yet been presented to show that any serum except that prepared with the homologous type of pneumococcus is of specific value. In other words, Type I serum must be used only in Type I infection, Type II serum for Type II infection and so on. Typing of pneumococci has been so much simplified within recent years as to make it pos-

*From the Department of Medicine, University Hospital, Minneapolis.

PNEUMOCOCCUS TYPES IN MINNESOTA—LAYNE AND REIMANN

TABLE I. DISTRIBUTION OF PNEUMOCOCCUS TYPES IN VARIOUS PARTS OF THE WORLD

Observers		Kohl and Reitzel	Gundel and Seitz	Sutliff and Finland	Bullowa	Wu and Zia	Percent- ages	Grand Total
Location	Minnesota	California	Germany	Mass.	New York	China		
<i>Types</i>								
I	84	138	18	302	253	..	20.3	795
II	20	39	17	157	79	..	8.0	312
III	23	27	145	153	115	..	11.8	463
IV	14	3	109	16	65	4	5.4	211
V	27	5	3	48	60	15	4.0	158
VI	13	2	149	14	29	18	5.7	225
VII	14	14	35	48	69	2	4.6	182
VIII	19	8	50	68	98	10	6.4	253
IX	5	1	37	15	25	10	2.4	93
X	1	2	92	30	8	12	3.7	145
XI	1	1	52	14	6	8	2.1	82
XII	1	1	4	8	14	4	.8	32
XIII	4	0	7	6	8	7	.8	32
XIV	5	4	4	20	45	11	2.3	89
XV	0	1	1	5	1	5	.3	13
XVI	10	2	1	2	4	4	.6	23
XVII	3	1	23	7	8	3	1.2	45
XVIII	1	1	155	31	24	4	5.5	216
XIX	6	0	48	6	16	9	2.2	85
XX	5	1	30	13	11	5	1.6	65
XXI	3	2	12	0	13	2	.8	32
XXII	8	0	59	0	16	3	2.3	86
XXIII	0	0	14	0	3	14	.8	31
XXIV	1	0	6	0	3	2	.3	12
XXV	1	1	12	0	2	1	.4	17
XXVI	0	0	0	0	0	0	0	0
XXVII	1	0	2	0	2	1	.2	6
XXVIII	0	0	26	0	9	1	.9	36
XXIX	1	0	44	0	5	2	1.3	52
XXX	6	0	16	0	2	0	.6	24
XXXI	0	0	10	0	3	1	.4	14
XXXII	0	0	1	0	4	0	.1	5
IIA	0	6	0	0	0	0	.2	6
Unclassified	0	62	3	0	0	4	1.7	69
Total	277	322	1,185	963	1,000	162	100.0	3,909

sible and reliable in the average laboratory. With the so-called Neufeld technic, type determinations can often be made within a few minutes.

Until recent years only those cases which conformed to the classical clinical entity of lobar pneumonia were regarded as amenable to serotherapy, probably because the great majority of cases of this form are due to Types I and II pneumococci. Newer knowledge has rendered it obligatory that the causative organism be determined in every case of acute pulmonary infection. In the first place, Types I and II pneumococci occasionally incite atypical or broncho-pneumonia and many of the higher types of pneumococci may cause typical lobar pneumonia. Other organisms such as the hemolytic streptococcus and the staphylococcus may also cause either the lobar or the broncho- form of pneumonia. It is, therefore, desirable and necessary for purposes of specific therapeutics to regard all cases of pneumonia from an etiologic rather

than a clinical or anatomic point of view. Anti-pneumococcus serum for Types I, II, V, VII, and VIII are commercially available and easily administered; Type IV, VI, and XIV sera will soon be obtainable. Other type serum will no doubt be developed when the prevalence of infection of any given type is great enough.

Because of the continued development of anti-pneumococcus sera for the higher type of pneumococci, it was thought desirable to determine the distribution of pneumococcus types which caused pneumonia in Minnesota, to ascertain the types most prevalent, and to compare the incidence with data gathered from other parts of the world. Since the object of this study was chiefly to determine type incidence, discussion will be limited to this aspect. Samples of sputa were obtained chiefly from adult pneumonia patients in the University Hospital and from private patients of physicians from various parts of the state, and typed by the mouse method or the Neufeld method. During a period of three

years there was no appreciable difference in the distribution of the various types during any one-year period as compared with the other one-year periods. Similarly, the distribution of types in the series of cases which were admitted to the University Hospital was comparable with the series in which the sputum was sent to the hospital for typing. The incidence of types found in 277 sputa during this three-year period is shown in the table. In common with the data of others, Type I was most prevalent. Type V, however, exceeded Type II in prevalence. Types I to VIII were apparently responsible for 77 per cent of cases in this study. Otherwise with few exceptions the type incidence is quite similar to that reported from Germany, China, and various parts of this country, as shown in the accompanying table. The inclusion of Gundel's series in which he isolated pneumococci from the nasopharynx of 1,185 healthy school children in Heidelberg affects the grand total of the lower types, namely, I to VIII. His figures are included in the table to show the relative frequency of various types in healthy carriers. Of the 3,909 reports of typings collected, Type I is the most prevalent with 20.3 per cent, Type III second with 11.8 per cent, and Type II third with 8.0 per cent. Types I to VIII make up 66.2 per cent of the total. Type XXVI is the only type which has not been isolated by any of these observers mentioned. The world-wide uniformity of pneumococcus type distribution is indeed remarkable.

The type distribution in pneumonia patients determined in this study may serve to give an approximate idea of distribution of pneumococcus types, especially those from Types III to XXXII, among healthy carriers. Gundel's studies have shown that the incidence of the higher types of pneumococci among healthy carriers and in pneumonia patients is similar. His studies further indicate that pneumonia due to the higher

types is most often endogenous in origin in contrast with typical pneumonia due to Types I, II, and III.

Comment

The distribution of pneumococcus types causing pneumonia in a small group of cases in Minnesota was found to be similar to that in other parts of the world. Types I to VIII were responsible for 77 per cent of the cases, as compared with 74 per cent according to Kohl and Reitzel, 84 per cent according to Sutliff and Finland, and 77 per cent found by Bullowa. The availability of specific immune sera for most of these types renders it necessary to type the pneumococcus in the sputum of all patients with pneumonia to determine the causative organism and to administer appropriate specific antiserum for the given types of infection.

We wish to acknowledge with thanks the technical assistance of Miss Cecelia Kramer in the study of this problem.

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THE NEW INSULIN*
RUSSELL M. WILDER, M.D.
Rochester, Minnesota

A CAREFUL trial of protamine insulin has been conducted by a number of clinicians⁴
5,8,10-14,16-18,21-23,25 and almost without exception those who have used it speak favorably of it. The material still is unavailable commercially, but this soon will be remedied. The preparations now at hand probably are less satisfactory than others that later may be developed. Nevertheless, they represent a real advance and thus the topic is of importance and one with which the general practitioner soon must familiarize himself.

It is my belief that the greatest good from medicine to the greatest number of patients is accomplished only when methods of treatment become simplified. Not until then do they become useful to the physician in general practice, who must carry the burden of treating the large majority of the sick. This, particularly, is true in diabetes and in so far as the new insulin now complicates the treatment of this condition, its introduction in a sense is regrettable. Physicians were just beginning to learn how to use regular insulin. I believe, however, that protamine compound ultimately will simplify the management of diabetes. Occasional patients, particularly youthful patients, always have been difficult to control successfully and have presented problems which, frequently, even the specialist failed to solve. There will be fewer failures with longer acting insulins. The very great care required for the planning and measuring of the diet has made the treatment of diabetes exceedingly irksome for physicians with little experience in dietetics or little time to teach their patients. The new insulin promises to make rigid control of the diet somewhat less necessary.

Varieties of New Insulins

My title "The New Insulin" is not well chosen, because already several varieties of new insulin have appeared, and, as I said before, further developments are in prospect. The Hagedorn insulin is prepared by the addition to regular insulin of protamine obtained from the sperm

of certain varieties of salmon. The advantage of protamine insulin is its slow hypoglycemic action, a consequence of slow absorption. Beecher and Krogh have made direct observations, by means of a Sandison-Clark chamber inserted in rabbits' ears, of insulin precipitated at its isoelectric point and of protamine insulin. They recorded that while almost all traces of insulin had disappeared after forty-five minutes, protamine insulin took five hours to disappear so completely.

The observations of Drs. Scott and Fisher, of the Connaught Laboratories in Toronto, that the addition of certain metals to insulin extends its activity has proved applicable, likewise, to the protamine compound. The addition of zinc to protamine insulin increases still further its hypoglycemic action. It also increases the stability of the compound. At present either calcium or zinc is being added, to secure greater stability. The amount of calcium in the preparation coming from the Eli Lilly Company is either 1 or 2 mg. for each 100 units of insulin; the amount of zinc is 1 mg. for each 500 units. The effect of adding calcium, as presently I shall show, is to shorten slightly instead of lengthening the action of the compound (Fig. 1). In the meantime, Doctor Melville Sahyun, of Frederick Stearns and Company, has prepared a solution of crystalline insulin that has an action which is considerably prolonged, as compared to the action of regular insulin. Doctor Scott, in his excellent investigation, had discovered that the presence of traces of zinc or other metals was necessary in order to crystallize insulin. The zinc in Sahyun's preparation may explain its longer action, but much less zinc is contained than that which the Toronto investigators found to be necessary to prolong the action of ordinary insulin, and, therefore, Sahyun has supposed either that a chemical reaction has occurred in his preparation between the insulin molecules and the zinc used for crystallization, or that racemization has taken place within the large protein molecules of insulin, whereby different characteristics have been imparted.

Clinical observations with crystalline insulin

*From the Department of Medicine, The Mayo Foundation, Rochester, Minnesota. Read before the meeting of the Academy of Medicine, Rochester, New York, October 1, 1936.

have been made and reported by Altshuler and Leiser, by Rabinowitch and his associates, by Freund and Adler, and by Mains and McMullen. A disadvantage, to my mind, is that the duration of its action is not sufficiently prolonged.

One more new insulin may be mentioned, namely, insulin tannate. This has been prepared by Bischoff, and a clinical study of patients treated with it has been reported by Gray. A suitable solution of tannic acid is added to commercial insulin of U 100 strength so that the resulting mixture contains 3 mg. of tannic acid for each 100 units. The addition must be made immediately before injection. A delayed and prolonged hypoglycemic action was obtained with this material so that fewer doses per day and a smaller total number of units sufficed to control glycosuria. The advantages claimed are the cheapness and ready availability of tannic acid. A disadvantage would be rather frequent development of erythema and painful subcutaneous swellings at the sites of injection.

Doubtless, other means will be found for prolonging the hypoglycemic action of insulin. Among those reported to date, none appear to be so satisfactory as that involving the addition of protamine to insulin with or without added calcium or zinc, and, therefore, it is principally of preparations of protamine insulin that I shall speak.

Patients Pleased

At the clinic, our experience with the new insulins began last January, on the receipt, from Professor Hagedorn and his associates, of some protamine prepared in his laboratory. Continuously since then, material has been received from the laboratories of the Eli Lilly Company. Eighty-three patients had been treated with this product up to September 13, 1936. They comprised twenty-two children and sixty-one adults. The youngest individual was aged six months, the oldest was seventy-seven years of age. In forty-eight of these cases, the administration of protamine insulin has been continued. In thirty-four cases, the administration was discontinued before the patients were dismissed from the clinic. It was our early policy to continue treatment with protamine insulin only when the patients lived close at hand, while in some cases its continued use was prevented because patients

were obliged to leave the hospital before they had been trained sufficiently well. We now believe that nearly all of our diabetic patients who require any insulin will be dismissed from the clinic using protamine insulin as soon as this becomes available commercially.

Only one patient whose treatment was well started with protamine insulin has gone back to the use of the regular preparation. This is a young woman who, being a dietitian, has been able to maintain splendid control of her disease. She required 60 units of regular insulin in two divided doses. At first, she was pleased with protamine insulin, but later she experienced unusual difficulty in recognizing the onset of reactions. In consequence, she was unable to tell when to take sugar to protect herself from slipping into a state of irrationality. In this case, also, the requirement of insulin regularly fell at the onset of each menstrual period and when protamine insulin was used a sufficiently prompt readjustment of dosage was difficult to make and severe episodes of hypoglycemia occurred. Allen reported the case of a taxicab driver who was unable, when using protamine insulin, to avoid trouble from reactions which previously, with multiple doses of regular insulin, he had successfully avoided for years.

The remainder of our patients are pleased with protamine insulin and for the most part would be badly disappointed if they had to give it up. One of them, at our request, wrote to a number of the others—"as one diabetic to another"—in order to obtain frank expressions of opinion from them. He chose seventeen individuals who had returned to their homes and had been taking protamine insulin for more than three months. The dietitian was one. Her reply was unfavorable. The comments of the others were favorable and the majority were enthusiastic. These particular patients had been selected for our early observations because they had severe diabetes; many of them were sensitive to insulin and frequently had reactions which alternated with severe hyperglycemia. At present, with protamine insulin, their diabetes is by no means perfectly controlled. Nevertheless, they feel healthier, they are pleased to have to make fewer injections each day and that the total number of required units is less than it was. Since they are well satisfied, it is obvious that patients who require a smaller number of units and those who

are resistant to insulin are pleased. One of the latter is a man, aged sixty-five years, who, for ten years, has used 90 units of regular insulin in three different doses. Now, 60 units of protamine zinc insulin administered in one dose before breakfast prevents glycosuria. This gentleman recently commented with grateful enthusiasm that he would be taking 700 less injections each year.

A Saving in Units; Fewer Injections Needed

Before treatment with protamine insulin, the average daily units of regular insulin taken by the forty-eight patients who are continuing to use protamine insulin was forty-five. With protamine insulin, the average daily number of units required was 40.4, but accessory doses of regular insulin were used by a number of these individuals and the average daily units of the latter were 8.5. These figures seem to belie the statement made previously by myself and others that a saving in units is accomplished through the use of protamine insulin. The figures, however, fail to tell the whole story. Many of the patients, before using protamine insulin, received two little regular insulin to be free from urinary sugar, whereas afterward the control of their diabetes was more satisfactory. Also, since protamine insulin has been placed at our disposal, we have permitted the use of a diet richer in carbohydrate than we formerly considered desirable. The diet was increased in its content of carbohydrate in twenty-two of the forty-eight cases. Thus, a relative saving of units undoubtedly has been accomplished. In nearly all the cases where the diet was not changed, an actual saving of from 10 to 40 per cent ultimately has been obtained.

The average number of injections given these patients before protamine insulin was used was 2.6. The average number of injections of protamine insulin has been 1. When accessory injections of regular insulin were administered, they usually were given at the same time in the morning. In a few cases, accessory regular insulin was also used in the afternoon. The average number of injections of accessory insulin was 0.76, a figure which probably will be smaller in the future because in most of these cases plain protamine insulin was used. Rabinowitch¹⁷ reported that he rarely has had to use any accessory regular insulin and that he is ob-

taining satisfactory control in most cases with one dose daily of the Connaught protamine zinc insulin. Our recent experience with Lilly's protamine zinc insulin is similar.

The Healthiness of Patients Improved

It is interesting that many patients say that they feel healthier while using protamine insulin. This is readily explained in cases where better control of glycosuria has been obtained, but it also is true of the older individuals whose glycosuria previously was well controlled with not more than two injections daily of regular insulin. Possibly the more continuous action of protamine insulin is responsible. Even multiple administrations of regular insulin leave intervals when the patient is without the benefit of insulin. In this connection, Rabinowitch¹⁸ observed diminution in the serum bilirubin of patients taking protamine insulin. In one group of cases, the value for the bilirubin was 1.26 mg. per 100 c.c. of serum before administration of protamine insulin and 0.35 mg. per 100 c.c. afterward. He also found that the value for the cholesterol was diminished in patients who showed any elevation of the cholesterol of the plasma on previous treatment with regular insulin. Joslin and his associates, and also Smith, have commented on the improved health of patients and, recognizing the theoretical advantage of having a continuous supply of insulin as provided by the protamine compound, Joslin has expressed the hope that the degenerative complications of diabetes will be prevented. Hanssen has reported that enlarged (fatty?) livers, observed in diabetic children and young adults diminished in size after a period of treatment with protamine insulin. Winnett has reported a similar observation in the case of an adult, as also has Bowcock. This, in my experience, has also been observed after satisfactory treatment with multiple doses of regular insulin.

No Ill Effects from Protamine Insulin

Ill effects from protamine insulin have been conspicuous by their absence where the doses used were not excessive. Local redness or swelling at the sites of injection have been missing except in two cases, in which the sensitivity presumably was to pork and not to the protamine. The patients previously had been obliged to use a special insulin made from beef pancreas.

Apprehension has been expressed that continuous treatment with a material containing even a small amount of zinc ultimately might be injurious. This metal, as I have told, is now added to the preparations. There is little reason for such apprehension. The dose of zinc is limited to 1 mg. for 500 units, an amount which probably is smaller than that obtained from foods and cooking utensils. The body readily excretes zinc, as is shown by the failure of zinc to accumulate in the blood of workers who for years have been exposed to the fumes of zinc. I am indebted to a recent paper by Rabinowitch and his associates for this information. Zinc, they said, has been added to the rations of animals observed through three generations, without producing deleterious effects.

I mentioned before that both zinc and calcium have been added to protamine insulin to stabilize the precipitated mixture. Calcium is less effective than zinc as a stabilizer. In a number of cases, patients or nurses have returned bottles of protamine calcium insulin with the normal flocculant precipitate changed to a granular precipitate and adhering to the sides of the bottle. It never has happened with the zinc compound. Also, zinc lengthens the hypoglycemic action of the protamine insulin, which, in my opinion, is advantageous, whereas calcium shortens this action (Fig. 1).

Hypoglycemic Reactions

The subject of hypoglycemic reactions is one which most of those reporting on protamine insulin have minimized. One of my assistants, himself a diabetic, deplores this optimism. The insulin reaction, even if trivial, now is the principal bugbear of diabetes. As one man expressed it: "I don't have diabetes any more, I have insulin reactions."

The action of protamine insulin is so much slower in its development than that of regular insulin that symptoms frequently are avoided, even when the amount of dextrose in the blood has fallen to hypoglycemic levels. For example, in one of our early observations at the clinic, a young man with severe diabetes was given 50 units of protamine insulin and his blood sugar remained constantly at 50 mg. per 100 c.c. for the last twenty-seven of thirty-eight hours of fasting. Another young man with diabetes of severity was given 70 units of protamine insulin

and his blood sugar remained in the neighborhood of 50 mg. per 100 c.c. for the last forty of fifty-seven hours of fasting (Fig. 2). In neither of these cases were there any noteworthy symptoms until the very end of the period of ob-

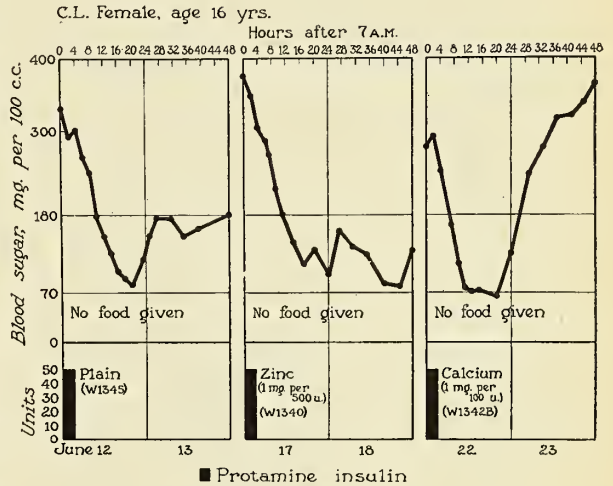


Fig. 1. Hypoglycemic effect of equal doses of plain protamine insulin, zinc protamine insulin and calcium protamine insulin.

servation, but finally in both cases exaggeration of tendon reflexes occurred, with mental confusion and headache. Administration of dextrose did not relieve these abnormalities for several hours. Such hypoglycemia probably is quite undesirable even in the absence of symptoms. Doctor Bollman, by giving protamine insulin to dogs, in sufficient doses to maintain long-continued lowering of the blood sugar, has observed that the animals may manifest no symptoms other than drowsiness for fifty or sixty hours and then may suffer from convulsions and die. Dextrose, if administered too late, will not protect such animals; indeed, frequently, its administration precipitates the convulsion. Animals dying after these experiments showed multiple petechial hemorrhages scattered through the brain.

While the symptoms of hypoglycemia usually occur less frequently with protamine insulin, exceptions occur and in some instances the reactions encountered have been more annoying than those commonly seen with regular insulin. The symptoms differ from those of regular insulin by the absence usually of those manifestations which have been attributed to the protective discharge of epinephrine. The blood sugar falls so gradually that the suprarenal glands apparent-

ly are not aroused. I refer to tremors, sweating, tachycardia and pounding pulses. In the hypoglycemia after protamine insulin, the first effects are referable to cerebral disturbances. Drowsiness, headache and nausea are observed, or, at first, there may be nothing more than a vague feeling of fatigue which cannot be differentiated from fatigue from other causes. It is followed by increasing weakness and then by a little numbness about the mouth or at the ends of the extremities. These symptoms are easily recognizable, in most cases, but the patient must be taught to attend to them before increasing drowsiness and mental dulness make him incompetent. Drowsiness, when it first appears, may escape detection, particularly if the patient is busy in the performance of a task requiring physical activity. The principal difficulty, without question, is the early effect on the mind, which interferes with the patient's judgment and leads him to neglect taking precaution to avoid further trouble. Later, he not only is unable to help himself but actual negativism develops and he resists the attempts of others to help him. Finally, the signs of the disturbance become more apparent; the drowsiness increases or in some cases euphoria develops, or delirium or muscular incoördination, with twitchings of muscles, contortion of the face, or actual convulsions.

It is not true, as several writers have suggested, that severe reactions are not encountered after injections of protamine insulin. A few patients have wakened in the morning with sore, stiffened muscles and bitten tongues as evidence of nocturnal convulsions, and two attacks of convulsions have been observed in the daytime in the hospital.

Patients have stated that the early symptoms of hypoglycemia after administration of protamine insulin may be indistinguishable from those they have learned to associate with hyperglycemia and acidosis. This probably is because of the nausea which occurs not infrequently. One woman refused to eat her evening meal because of nausea and insisted that acidosis was developing. The nausea usually disappears shortly after quickly absorbable carbohydrate has been eaten. We have not seen vomiting among conscious patients, but it has occurred in cases in which patients had reactions in their sleep.

Symptoms suggesting slowly reversible changes in the central nervous system persist after the

severe reactions. Such symptoms are: amnesia, headache, tremor, dulling of the sensation of taste, and exaggerated tendon reflexes.

Another complication encountered more regularly with protamine insulin is the hypoglycemic effect of muscular exertion. This adds to the difficulty of treatment because it either necessitates careful regulation of the amount of exertion, so as to keep it constant from day to day, or demands the administration of extra carbohydrate before and after the exertion, to neutralize the depressing effect of the exercise on the blood sugar. Many of the severe night reactions to which I have referred followed afternoon swimming or a long game of golf.

Injection of Protamine Insulin an Imperfect Substitute for the Normal Pancreas

The flocculent precipitate resulting from the addition of protamine to insulin hydrochloride is relatively insoluble in the tissue fluids. It has been supposed that its preliminary breakdown is necessary before the insulin of this compound is absorbable into the blood. The injected material serves as a depot; from it, insulin enters the blood presumably at a constant rate rather than by adjustment to the needs of the body. Normal pancreatic islands supply insulin intermittently as is required at the time. Tumors of the pancreatic islands are not provided with normal nerves and their activity is thus not regulated to conform to the needs of the body. Patients receiving protamine insulin behave very much as do those with island tumors, both in their tendency for reactions to develop in the night when the interval between feedings is long, and in their hypersensitivity to the hypoglycemic action of exercise.²⁴

On the other hand, there is a degree of adjustment of the rate of exhaustion of the insulin in the injected depot of protamine insulin so that at times, when food is entering the body, insulin either is liberated more rapidly, or, having reached the blood, comes into action sooner than it does when the organism is fasting. I offer the following experiments in evidence of it.

One hundred thirty-two units of protamine insulin containing 1 mg. of calcium per 100 units were injected subcutaneously into a patient with severe diabetes. At the same time, a twelfth of the day's allowance of food was given by mouth. The same feeding was repeated there-

after at two-hour intervals, so that the intake of food was practically continuous. It consisted of an appropriate mixture of milk, cream and karo syrup, the allowance of carbohydrates, fat and protein for each twenty-four hours being

just held his blood sugar in the normal range. In this case, at 7 a. m., the "zero" hour, the usual dose of protamine insulin (70 units) was given, but food was withheld. The value for the blood sugar was at the physiologic level of

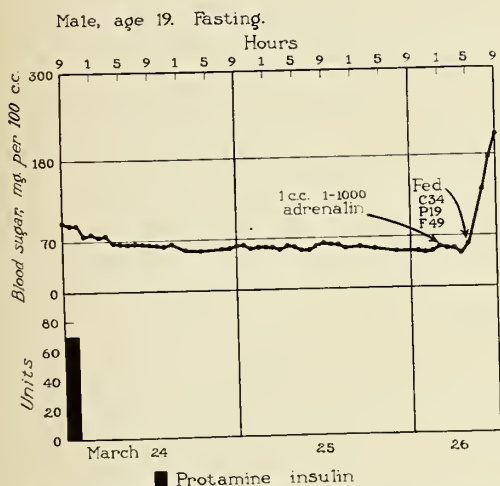


Fig. 2. Values for blood sugar in case in which patient fasted fifty-seven hours after administration of protamine insulin.

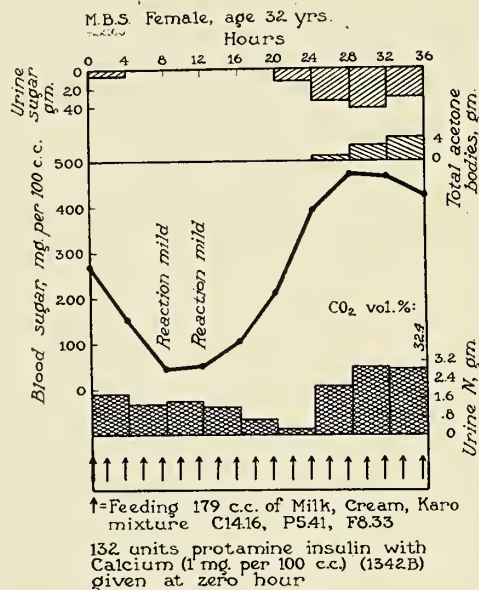


Fig. 3. Values for blood sugar and other data after administration of protamine insulin.

the same as the patient previously took in three mixed meals. The dose of protamine-insulin represented one and a half times the patient's customary daily dose of regular insulin. The reason for the larger number of units was to provide enough active insulin in the first twenty-four hours to equal the previous dose of regular insulin. As I later shall explain, the effect of protamine insulin is not all exerted the day of its administration (Fig. 3).

Observations started at 7 a. m. At this "zero" hour, the patient had fasted since the evening meal of the day before and the last previous injection of insulin (regular insulin) had been given ten hours before. The value for the blood sugar at the "zero" hour was 328 mg. per 100 c.c. It fell gradually, reaching physiologic values at the fourth hour and hypoglycemic values later; it then rose equally gradually to pass the "zero"-hour level before the twenty-fourth hour. After twenty-four hours, the excretion of nitrogen was increasing, acetone bodies were accumulating, and the carbon dioxide combining power of the plasma was decreasing.

This observation is to be compared to another made of a patient who fasted. He had received 70 units of plain protamine insulin each morning for several days before; the dose which

100 mg. for each 100 c.c. It fell gradually into the hypoglycemic zone and remained there for fifty-seven hours, when feeding was resumed. The patient in this second case had diabetes of severity as was shown on another occasion when a dose of 70 units of regular insulin followed by fasting did not sustain a low blood sugar for more than a few hours and was followed in twenty-four hours by intensive glycosuria and acidosis (Fig. 2).

I interpret these results to mean that the protamine insulin in the first case was more rapidly exhausted. Activity of insulin was no longer evident after twenty-four hours, as was apparent from rapidly developing acidosis. In the second case, after fifty-seven hours, there was still a sufficient insulin effect to keep the value for the blood sugar in the neighborhood of 50 mg. per 100 c.c. and to prevent acidosis.

It seems probable from this and other observations that a quantum relationship exists between insulin and its substrate dextrose, and that with more dextrose to be acted on in a given time, more insulin is exhausted. Possibly, in both of the observations recorded, all of the

insulin had left the site of injection hours before its activity was lost, but if so, it must have been distributed elsewhere in secondary depots from which, in the first case, where more dextrose was present, it was released more rapidly. Thus, in a sense, an injection of protamine insulin does supply insulin more or less rapidly, depending on the demand for it, and to this limited extent, a depot of injected insulin behaves like the normal pancreas.

The Duration of Action of Insulin

Protamine insulin injected once each twenty-four hours into patients receiving food is cumulative in its action for a period of at least three days; the full effect of a given daily dose does not become apparent until the end of the third day. Thus, it regularly happens when patients who previously have used regular insulin are abruptly changed to equivalent daily doses of protamine insulin, the urine shows much sugar on the first day, less on the second day, and much less or none on the third. Similarly, if a given daily dose of protamine insulin is either increased or decreased, the full effect of the change in the number of units is not entirely apparent before the third day. Quantitative information here is not available, but from the effect on the sugar of the blood and urine, it is my impression that only about 50 per cent of the amount of protamine insulin injected in one day exerts itself that day, leaving 50 per cent to be used, of which perhaps half acts the second day and the balance the third day. If this is true, one ought to be able, in cases of mild diabetes, to obtain satisfactory management with one injection every two days. In a case of moderate diabetes, in which the patient was a girl, eighteen years of age, who had been a diabetic for five years, the diabetes had been controlled satisfactorily with 30 units of protamine zinc insulin administered before breakfast. The patient was given 50 units. A mild reaction occurred the following morning, but otherwise the patient was comfortable and the value for the blood sugar remained within the physiologic range for forty-eight hours. It stood at 80 mg. per 100 c.c. at the end of forty-eight hours. The diet had not been discontinued; it consisted of 177 gm. of carbohydrate, 72 gm. of protein and 145 gm. of fat. Again, 50 units was given with similar results. The observation, to my

mind, is encouraging, promising, I hope, that with an insulin even more prolonged in its hypoglycemic action, successful treatment may ultimately be accomplished with injections spaced at intervals of several days.

Patients Difficult to Stabilize with Protamine Insulin

A few of the patients observed at the clinic, particularly those with diabetes of long duration and who had been treated with regular insulin for many years, have been difficult to stabilize at first on protamine insulin. Some of them have taken several weeks before becoming nicely adjusted. This also has been the experience of Bertnard Smith, who suggested the possibility that "a glycolytic function that has become somewhat adjusted to the more acute effect of regular insulin may be slow in adaptation to the more gradual effect of the protamine preparation." The subject should be emphasized in order to avoid unnecessary discouragement when an early result with protamine insulin is unsatisfactory.

Some part of this difficulty may be explained by changing types of protamine insulin used to date; also, occasional lots have been less potent than others, but I am reasonably well satisfied that these are not the entire explanation and that Doctor Bertnard Smith has recognized something more fundamentally significant in this sensitiveness of certain patients to the change from regular to protamine insulin.

The Treatment of Ambulant Patients with Protamine Insulin

When protamine insulin was first used at the clinic, former patients who had diabetes of established severity were called in and asked to serve as subjects for its clinical testing. They were placed in the hospital and closely supervised by means of repeated analyses of the blood for sugar.

With this experience at hand, we began the treatment of ambulant patients by using nothing but fractional tests of the urine as a guide to the adjustment of the requirement of insulin. Our results are encouraging. By adopting certain simple rules, we have encountered no serious difficulties. Our procedure at present is as follows:

Patients who previously have been receiving

multiple doses of regular insulin are served their meals in the diet kitchen and the doses of insulin are adjusted as accurately as possible. Patients who previously have not used insulin, unless their diabetes is very mild or very early, are taught the use of regular insulin, the planning of meals, and the testing of urine. Daily visits are required with reports on the tests of the urine. Four of these tests are asked for daily, one before each meal and one at bedtime. The diet which we prescribe is one providing from 140 to 160 gm. of carbohydrates.

When we are satisfied that the dosage of regular insulin is approximately correct, we start giving the protamine compound; on the first day we inject as many units of protamine insulin as the units of regular insulin found necessary before, and, in addition, give four-tenths the number of units of regular insulin. The protamine compound is administered in the morning shortly before breakfast. The regular insulin is given at the same times of day as it was before. For instance, if the dose and distribution of regular insulin before was 30, 10, 20, and 10 units, we now give 12, 4, 8, and 4 units. If it was 20, 0, 10, we give 8, 0, 4. The second day, the same dose of protamine insulin is administered but the doses of regular insulin are made to equal two-tenths of what they were originally. On the third day, regular insulin is omitted. From this point on, many patients require no more regular insulin. In cases in which the diabetes is more severe, it has not been possible for us to obtain complete control of glycosuria without supplementary doses of regular insulin, but almost always the number of these has not been more than two.

The patient, in the meantime, has received implicit directions on the subject of reactions and their antidoting. We now are using loaf sugar to control hypoglycemia. If this is allowed to dissolve in the mouth, its inversion and absorption proceeds rapidly enough to control early symptoms quickly, yet because inversion is necessary before absorption occurs, the effect is more prolonged than that of solutions of dextrose like orange juice. The patient is instructed always to carry loaf sugar on his person and to take one loaf at the first suggestion of any unusual symptom and another loaf every thirty minutes thereafter so long as symptoms persist or recur. It is advised that a companion sleep in the room,

to be ready to help if nocturnal reactions occur. No unusual physical exertions are permitted until the new regimen is fully established and experience has been obtained in the recognition of reactions and their treatment. Later, when strenuous exercise is undertaken, the patient is advised to eat two loaves of sugar before and afterward. When the control is satisfactory, the number of urinary tests is reduced to two a day, one before breakfast, the other at some other time of the day; the tests are preferably performed at different times on different days. Finally, when all is well, one test before breakfast suffices.

One Dose of Protamine Insulin a Day

At the clinic, we now are satisfied that the best time of day to give protamine insulin usually is in the morning before breakfast and that administering more than one dose in twenty-four hours rarely is necessary. We²² already have published some reasons for this. The peak effect of an injection of zinc protamine insulin is reached about eight hours later and the most advantageous time for this to occur is in the middle of the afternoon when the amount of blood sugar has been raised by the two preceding meals. Another good reason is that by this technic, the test of the urine made before breakfast becomes a very accurate gauge of the tolerable dose of protamine insulin. Tests at other times of the day reflect the hyperglycemia provoked by meals and we repeatedly have observed that postprandial glycosuria may occur even when the dose of protamine insulin is large enough to provoke a reaction at night. When the test in the morning shows sugar, one is informed that the dose of protamine insulin is inadequate and can be increased with safety. When this test shows no sugar, one knows that the dose has been large enough and the question then is whether it is too large. A reaction in the night is evidence of excess, but it is not wise to wait for reactions and our present rule is to reduce the dose by 5 units when three successive days have passed with morning urines free from sugar. Because of the three-day action of protamine insulin, changes in the dose are not made more frequently than every third day except when the necessity for smaller dosage is indicated by the occurrence of a reaction.

Accessory Regular Insulin

With protamine insulin given as I have described, glycosuria after meals occurs only in cases of severe diabetes. To combat such postprandial glycosuria, quick acting regular insulin is given in the morning with the protamine insulin, but in a different site, and, if necessary, it is given separately before supper. More than five or ten units are rarely needed. At the clinic we have found the Stearns solution of crystalline insulin to be very useful for this purpose. Its action is quick enough to provide for the hyperglycemia after breakfast and yet is prolonged enough also to provide for that following the noon meal. Possibly, such accessory insulin is unnecessary. Short periods of hyperglycemia after meals may be harmless. Patients are made less aware of them by symptoms than they usually are aware of periods of hyperglycemia that occur when regular insulin alone is being used. At present, we are disregarding traces of sugar in the urine during the daytime, but advising the use of accessory doses either of regular insulin or of Stearns' crystalline insulin when the tests before the noon and evening meals are strongly positive.*

Cases of Early Diabetes

In cases of mild diabetes, it is possible to begin treatment at once with injections of from 10 to 30 units of protamine insulin. In cases of very early diabetes with sudden onset of symptoms, the administration of protamine insulin may prove to be of the greatest possible value. The patients in such cases, for the most part, are children or young adults. The onset of their disease is often as abrupt as that of an acute infection. Polyuria and extreme thirst appear over night and very quickly attract attention; if treatment is withheld, dehydration rapidly follows, and acidosis and coma develop. I once saw a child with fatal coma five days after such an acute beginning. A characteristic of these cases of early diabetes is that the patients respond very rapidly to treatment, even to very little treatment. Their symptoms then disappear and afterward for many months they may show a steadily rising tolerance. They may even seem to have wholly recovered, but woe unto the doc-

tor who places great reliance on this recovery. It happens almost always within twelve to twenty-four months that the tolerance falls again and thereafter much more intensive treatment is required to maintain control of glycosuria. It always has seemed to me that in cases like this the condition would be curable if treated well and intensively from the beginning and in many of these I have tried with all means available to prevent the inevitable relapse. I have rarely succeeded, but hope springs eternal, and I hope now, with the possibility of continuous protection offered by this long acting insulin, that better results can be obtained. Therefore, at the clinic, we now are giving 10 to 15 units of protamine insulin daily in such cases of juvenile diabetes with the hope that the more continuous protection of the pancreas afforded by this means will accomplish more than previously has been possible by using multiple doses of regular insulin.

Treatment of Emergencies

The treatment of coma and of the acute emergencies of diabetes such as accompany infection or are provoked by fracture of bones or by surgical procedures would seem to call for a quicker acting insulin than the protamine compound. However, while the principal demands may need to be met by regular insulin, the supplementary use of protamine insulin has seemed to be very helpful. We have resorted to this in seven cases of diabetic acidosis and in the postoperative treatment of fourteen surgical patients, and have been gratified with the results. In the case of acidosis, our procedure has been to inject immediately 50 to 100 units of protamine insulin and thereafter to treat the patient in a conventional manner, with multiple doses of regular insulin. Very small amounts of regular insulin have been required. We have not had the courage to depend exclusively on protamine insulin in cases of diabetic acidosis, but Rabinowitch and his associates reported recently that they have done so in two cases and that the results were remarkably favorable.

Conclusion

In concluding, I would like gratefully to acknowledge that what I have recorded, in this effort to evaluate the usefulness of the new preparation of insulin, represents the joint efforts of

*Zinc insulin, that is, regular insulin to which zinc has been added so that 500 units is accompanied by either 1 or 2 mg. of zinc, can be used as effectively as the solutions of crystalline insulin.

a group of us which includes my associates, Dr. E. J. Kepler and Dr. E. H. Rynearson of the Department of Medicine, Dr. A. E. Osterberg and his assistants of the Department of Biochemistry, Dr. J. L. Bollman, of the Department of Experimental Surgery and Pathology, together with Drs. R. G. Sprague, B. B. Blum, J. W. Annis, E. F. Rosenberg and B. M. Clark, Fellows in Medicine, of The Mayo Foundation. The assistance of Miss Mary Foley, Sister Mary Victor and other dietitians and nurses of the St. Mary's and Kahler Hospitals is also gratefully acknowledged.

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A CASE OF CHORDOMA WITH A HITHERTO UNOBSERVED INTRASPINAL EXTENSION*

A. SCHWYZER, M.D.

Saint Paul

THE development of our knowledge of neoplastic formations originating from the notochord is not without interest. The first observations were made on the clivus Blumenbachii at the junction between the sphenoid and the basillary process of the occipital bone. Virchow before the *Physikalisch-medicinische Gesellschaft* in Wurzburg, Feb. 14, 1856, tried to explain the physiognomy of cretins by a premature synostosis between the sphenoid and the basillary process and demonstrated this synostosis on a newborn cretin. He then showed sections of other skulls with reference to the development of the clivus and mentioned incidentally some exostoses on the upper surface of the clivus in and on which mucoid-cartilaginous (knorpelig-schlei-

mig) growths were seen. Virchow had seen them as long as ten years before. Zenker also had seen three cases and later in the year 1856 Luschka published a case where two growths measuring one centimeter each had perforated the dura and had come out of the synchondrosis each through a separate 1.5 mm. cleft, while in the bone of the clivus a smaller additional tumor formation of the same kind was detected. The nature of these growths was thought to be cartilaginous and Virchow called them "Ecchondroses physaliphoræ sphenoo-occipitales," a term which well emphasizes the conception of their benignity. Others soon reported similar observations, but the relation to the notochord was not recognized until in 1858 Heinrich Mueller of Wurzburg, on the basis of exact embryologic studies, declared

*Read before the Minnesota Academy of Medicine, October 7, 1936.

them to be remnants of the chorda dorsalis. However, Virchow did not accept this conception and his overshadowing eminence in pathology prevailed until Ribbert definitely took side with Mueller in 1894. Ribbert at that time held the chair of Pathology at the University of Zurich and he made Steiner pay particular attention to the existence of such small formations at the clivus. Steiner then found them to be present in ten cases among 500 autopsies (2 per cent). This at once removed the tumors from the field of rare curiosities and made a closer investigation worth while. The fact that they were in the median line was against their being simple exostoses which might as well originate from lateral portions of the area. Furthermore the physaliphorous cells were seen to correspond in their appearance to the remnants of the notochord.

The whole subject was carefully described by Coenen¹ in 1925. He divides the chordomas into:

I. Cranial Chordomas

1. Chordoma of the Clivus
 - a. Benign
 - b. Malignant
2. Hypophyseal Chordoma
3. Naso-pharyngeal Chordoma
4. Dental Chordoma (arising from the odontoid process of the second cervical vertebra)

II. Vertebral Chordomas

III. Caudal or Sacro-coccygeal Chordomas

1. Antesacral
2. Retrosacral
3. Central sacral Chordoma.

Up to 1925 he had gathered sixty-eight cases from the literature, including his own. Since then the number of reported cases has markedly increased. The Mayo Clinic alone reported two cranial, one cervical, and ten sacro-coccygeal tumors.⁴ The etiology had been cleared up materially by Ribbert, who was able to cause benign growths of notochord tissue by puncturing intervertebral discs and thus releasing some of the soft gelatinous material of the nucleus pulposus which after escape from its imprisonment had enough power of growth to form small tumors. The normal course of the notochord and the varying microscopic picture of the chordomas was studied with great care especially by Linck.^{5,6} An illuminating picture of the upper course of the notochord is to be found in Fischel's "Entwicklung des Menschen" (Figs. 1 and 2).³

The benign tumors of the clivus and of some parts of the vertebral column have, by their benign nature, very little proliferative qualities and their microscopic picture resembles therefore more the normal remnants of the notochord. The tissue is very soft and gelatinous; the cells are full of vacuoles and many have lost their nuclei. These inert cell bodies have often fused with neighboring cells of the same dilapidated state, thus agglomerating into large gelatinous complexes. On the other hand, the malignant forms have, as a matter of course, areas in addition with more active proliferative qualities. We see here, areas with smaller, well staining cells alternating with parts of gelatinous disintegration. In the sacral chordomata (as will be shown) one may find areas which look very much like cartilage. Though the tissue has not the orderly arrangement of cartilage, it appears very closely related to it. At times, bony spicula or small areas of calcification are seen.

In the normal tissue of the early notochord, Linck⁶ differentiates between chorda cells and chorda sheath. In the earlier stages of embryonal development, the cells are little differentiated from each other, the cell limits are not sharp and give thus more or less the impression of syncytial masses. However, in the marginal portions of the notochord, one sees, even in early embryos, cells with good outlines, which gives them the appearance of epithelium. The protoplasm of all these cells is rather dense. According to Linck, the notochord, after its primary anlage, runs through three stages, of which the picture mentioned would be the first. At a second stage, vacuoles develop in the protoplasm of the cells, either as single ones which may reach large proportions in the cell and drive the nucleus toward the periphery, or the vacuoles are numerous and smaller. This gives them a foamy appearance and caused Virchow to create the name "physaliphorous" (physalis-bubble). The content of these very clear, transparent vacuoles is still sub judice. Part of it is mucus, part, apparently, some form of glycogen. Linck then differentiated a third stage in the life cycle of the notochord cell, the stage of fibril formation. The cell protoplasm has undergone marked and diffuse thready changes, in many places with loss of contour of the individual cells. This brings the general appearance near that of fibrocartilage. It goes without saying that between

these three stages there is a gradual transition. They are often seen co-existent in the same fetus. In some areas, for instance in the odontoid ligament and in the pharyngeal portion, the cells do not reach the fibrillary stage and dis-

of chordal cells. Only in the intervertebral portions of the chorda, this membrane could not be demonstrated.

Inside of this sheath one finds in the human embryo an intermediary substance which is pale

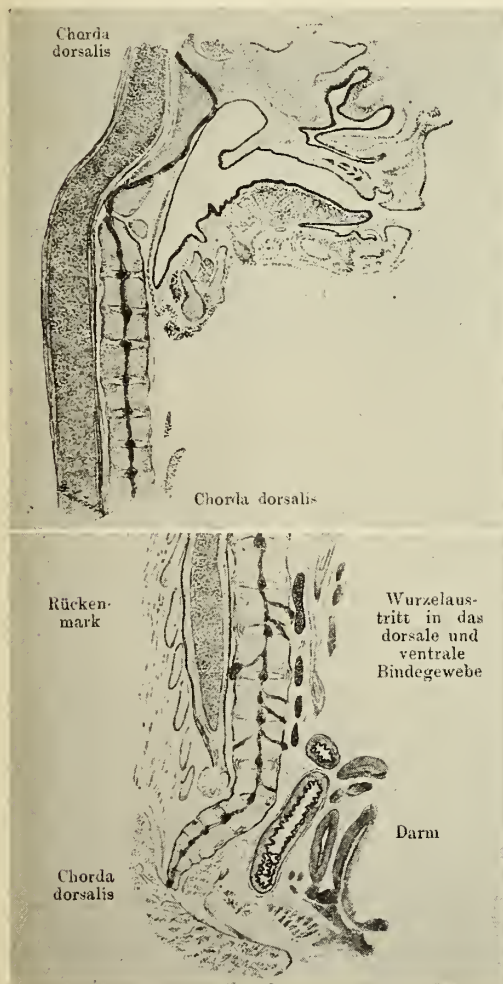


Fig. 1 (upper left). Notochord. Note its course through the odontoid process entering the cranial cavity at the foramen magnum, then diving through the clivus to reach the pharyngeal epithelium and turning upward toward the sella turcica (from Linck).

Fig. 3 (lower left). Lower portion of notochord. Note the branching off from it toward the surface of the spinal column in lumbar area (from Linck).

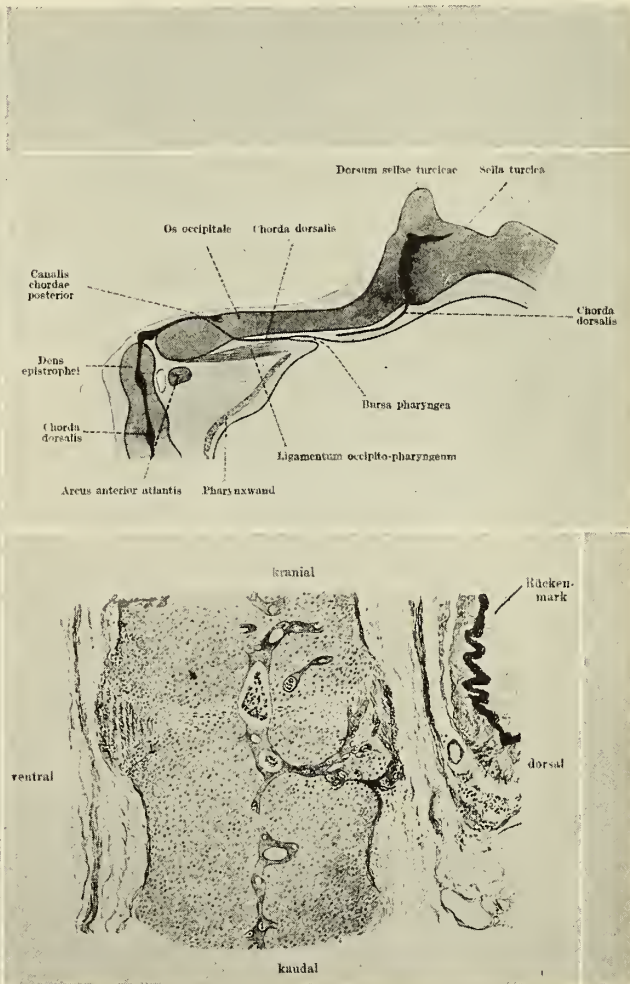


Fig. 2 (upper right). Notochord in its upper course. Note its relation to the bursa pharyngea (from Fischel).

Fig. 4 (lower right). Remnant of notochord at a later embryonic stage. Note chord remnants in sacral vertebra and on its posterior surface in the peridural connective tissue (from Linck).

integrate before this stage is reached. Stewart, in 1922, called attention to the existence of small vacuoles in the nuclei of the notochord cells, the nature of which is not yet known.

The notochordal sheath (I am again following Linck) is a homogeneous membrane enclosing the notochord cells like a tube. This homogeneous sheath even surrounds isolated remnants

blue or light grayish in the hematoxylin-eosin stained sections, homogeneous or slightly granular or striped. It is interposed between the central cellular strand and the outer sheath. In the earliest embryos it is not yet present, while the notochord sheath is a very early formation. The intermediary substance is apparently produced by the chorda cells after they have reached

a vacuolated stage, and is thus considered a product of the regressive stage of the chorda. Notwithstanding the similarity of this intermediary substance with the chordal sheath and the intimate proximity of the two, they should be

and Linck thinks that their appearance is limited to the areas mentioned, all of which are outside the skeletal formation of the vertebral column and the basis cranii. From this observation the conclusion was drawn that complexes of noto-

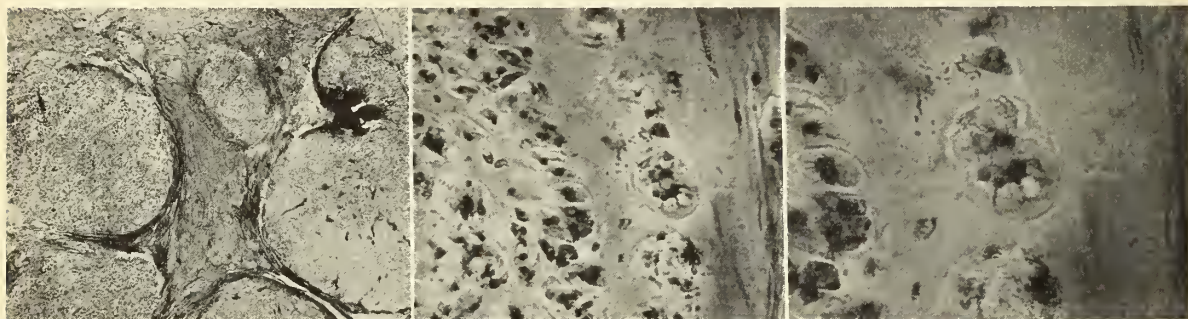


Fig. 5. Author's case. Low power magnification. Note large cellular masses surrounded by dense fibrillary strands. Areas of hyalin nest.

Fig. 6. Author's case. Physaliphorous cells, partly arranged resembling cartilage.

Fig. 7. Author's case. High power magnification.

considered as separate. The sheath stains somewhat better. The notochord is one of those organs which are destined to oblivion in the human and, therefore, dwindles and disappears in most places, leaving only here and there some small remnants. Where the cells are in connective tissue, a distinct sheath is mostly not recognizable.

Linck saw, in one of his young fetuses (2 cm. in length), a funnel-shaped protrusion of the notochord toward the surface of the pharyngeal epithelium. An intimate connection between notochord and pharyngeal epithelium was also seen in other larger embryos and already had been considered by Froriep, and later by Nebelthau, as a mechanical cause for the formation of the pharyngeal bursa, the rudimentary non-growing notochord exerting a pulling effect on the pharyngeal mucosa from behind and above. This theory is accepted today. In 1922, Linck,⁵ on the basis of his researches, stated that in the embryonal life, complexes of notochord cells are encountered in certain regions where they enter into direct contact and relation with surrounding connective tissue. These areas are on the dorsal and ventral side of the clivus Blumenbachii and in the odontoid ligament and then again on the ventral and dorsal surface of the lower spinal skeleton. The malignant chordomas originate from notochord cells which have preserved their early embryonal character or have regained it,

chordal cells which lie free in connective tissue are particularly prone to retain their early embryonal proliferative qualities or may regain them, and that it is their exposure to mechanical injuries which renders them especially susceptible to tumor formation. The bearing of Ribbert's experimental work on this point is obvious. As pointed out above, releasing by puncture, portions of the nuclei pulposi of the intervertebral discs allowed remnants of notochord material to grow into small, benign chordomata identical with those seen on the upper surface of the clivus. Linck's theory would seem plausible inasmuch as accidentally displaced cells play an important rôle in the etiology of tumors in general. However, this conception does not explain the aforementioned observation by Luschka of a small benign chordoma in the center of the bone of the clivus, nor the malignant central chordomata of the sacrum. The lumbar portion of the notochord sends ramifications to the surface of the vertebræ (Fig. 3). Some malignant chordomata of the lumbar spine are reported in recent years by Davison and Weil,² and by Zollinger.⁸ In both these cases the growth had started from the third lumbar vertebra and had reached a large size.

The dorsal vertebræ seem to be less frequently affected, perhaps on account of the rigidity of the dorsal spine, this quality reducing the mechanical factor in the etiology. Simon⁷ con-

siders notochordal remnants in some vertebral bodies and not in the nuclei pulposi as the origin of these growths. He calls attention to the fact that, in the adult human, the nuclei pulposi of the intervertebral discs consist of clumped gelatinous masses with no nuclei. The disintegration is thought to be due to pressure caused by the upright position, while notochordal remnants in the bodies of the vertebrae are free from such degenerating influence. This view is strengthened by Schmorl's observation in three cases of persistence of a notochordal channel through the bodies of vertebrae in adults.

The sacro-coccygeal chordomas, which are of chief interest for this report, may develop as presacral or retrosacral or central sacral growths. They may assume very large proportions. The first publication of a malignant sacral chordoma was by Feldmann, in 1910. Judging from the literature at my command the secondary intraspinal growth in a case of sacral chordoma which I have observed seems to be unique. The case dates back to 1920, but the interest which these growths have created of late tempts me to report the findings.

H. K. G., a lawyer, twenty-eight years old, said his trouble started following an injury. In April, 1919, while he was stepping off an elevator, the operator started the car before he got off. He grasped the gates and swung back and forth on them till the elevator came back to the floor. He first considered it only a nervous shock, but two days later he noticed a pain in the right popliteal space. There was a constant drawing sensation and in the latter part of May the pain became severe in the right hip. It gradually included the lower parts of the back and especially the tip of the coccyx. Then the whole right limb gradually became numb and heavy, so that he had to drag the leg. In July, atrophy of gluteal and thigh muscles was noticed. Soon after this he suffered from constipation so severe that even drastic cathartics would not move the bowels and he had to use his fingers to empty the rectum. In August, an x-ray was taken and he was told there was some trouble with his spine. There was a shadow in the region of the right sacro-iliac joint. Four abscessed teeth were removed. A blood Wassermann was negative. Retention of urine developed, and in January, 1920, we found it amounted to 850 c.c. The urine had become foul smelling, but improved under regular washing of the bladder. The retention persisted and he was unable to urinate. Frequently, however, it came involuntarily.

A rectal examination was then made and we were able to feel a hard, sessile tumor on the right upper anterior surface of the sacrum. The general condition had become desperate and an attempt at surgical relief was decided upon.

At operation, February 16, 1920, a median incision from the navel toward the symphysis allowed the tumor to be readily brought into view. It was directly below the promontory, on the right side of the sacrum. It was broadly sessile and had evidently originated from

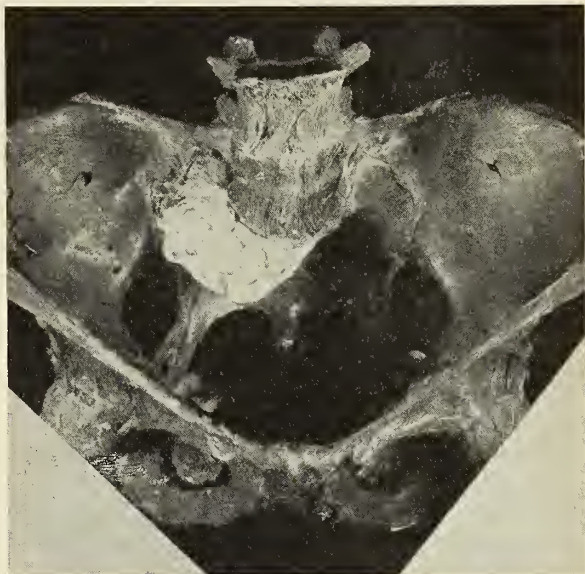


Fig. 8. Plaster of Paris reconstruction of chordoma reported.

the bone. The peritoneum was then split. The tumor, which was nodular, had the consistency of cartilage. It was protruding about 3 cm. from the surface of the bone. Its longitudinal diameter was about 6 or 7 cm. downward from the promontory, while transversely it measured 4 or 5 cm. and encroached somewhat on the right side upon the upper sacral foramina. Gently lifting the bifurcation of the large vessels upward, the mass was removed with a chisel, partly gouging it away. Most of the whole thickness of the bone was removed in the central area. Toward the spinal canal there remained only a thin, bony shell which was quite springy. The tumor had evidently started near the center of the bone. The first, second, and the upper border of the third sacral foramina were freed by this procedure. Though the tumor reached down to the level of the fourth foramen, this latter was free. After all tissue, which could be recognized as pathologic, was removed and, in addition, everywhere an apparently healthy shell of bone had been taken away, iodoform, boiled in 1:500 bichloride solution, was rubbed into the raw bone surface to assure us of the sterility of the presumably forming blood clot. The peritoneum was then sutured over this cavity in the sacrum. Radium was applied later on.

The patient walked pretty well until July, but in September he was losing ground again. Now a large mass could be felt over the right wing of the sacrum posteriorly, bulging this area diffusely. On the 20th of September, 1920, we operated again. Tumor tissue, 4 cm. thick and 7 cm. in length and in width, was

removed from underneath the sacro-lumbar muscles. It reached from the right sacro-iliac synchondrosis to a little beyond the midline. After large cartilage-like masses had been removed from the depth, the spinal canal was reached near the third sacral foramen. Most

closed tight. Part of the adjoining musculature was packed into the sacral gap.

On November 2, six weeks after this operation, the record reads: Walks rather freely and without cane into our office. Bladder and rectum same as before. A numbness which he had felt in his left heel, prior to his first operation, has disappeared, and his right foot had recently become stronger again. Radium was again used, but things grew gradually worse and without detailing the further events, he died in February, 1923.

The course of the disease in this case, lasting about four years from the first symptoms to the fatal ending, represents the average for such cases. These tumors grow, as a rule, slowly but insidiously. At the time of the operation, the tumor was thought to be a chondroma on account of its hard consistency. The correct diagnosis was only made later on, when a review of the microscopic sections revealed the true nature of the condition. The picture in the sections varied very much. The parts resembling cartilage showed considerable variation in size and shape of the cells, some with the characteristic vacuoles, multiple or large and single. The nuclei varied even more; some were large, others quite small, often irregular in form, crescent- or star-shaped. In some cells there were two or more nuclei. Again, in other areas, cells and intercellular substance were replaced by a practically non-staining gelatinous material of boggy contours, undoubtedly due to a mucoid degeneration, the end stage of the physaliphorous cells. Areas of this kind resemble myxochondroma. Amorphous almost unstained masses filled, sometimes, a whole high power field. Nowhere was to be seen an orderly arranged tissue. In fact it was disorder which was the characteristic feature of the microscopic picture. Small spiculæ of amorphous calcareous material were encountered here and there. Where the cells were more orderly arranged, the tissue, at first glance, looked like cartilage. Many areas were quite cellular, the cells then being small and of different shapes.

This picture is the same as usually found in the reported cases. Ewing considers the location of these growths more important for the diagnosis than their microscopic appearance, which may vary a great deal. At times sarcoma- or carcinoma-like cellular proliferation is seen. The varying degrees of malignancy correspond with the variability of the microscopic picture from very cellular growths down to advanced mucoid degeneration.

Our patient accused a wrenching of the back as the cause of the trouble. It is surprising how often one encounters trauma in connection with the onset in the reported cases. A slow growing tumor of this kind—located in the spinal column—would, naturally, quite often make its first symptoms after some minor sudden trauma.



Fig. 9. Composite picture of topography of chordomata as reported in the literature (adapted from Coenan).

of the right side of the sacrum had been sacrificed by now. Only between the first and second foramina a ridge could be left for the support of the ileum. We then noticed tumor tissue at the upper edge of the sacrum, continuing under the fifth lumbar lamina on the right side. After resecting this lamina, large chondroma-like masses could be removed from the spinal canal behind the dura. The dura was then opened and a unique picture presented itself. Floating over and between the nerves of the cauda equina we saw perfectly round, berry-like formations of yellow color, semitransparent like amber beads, pedicled downward by long, very thin and delicate threads. The beads had a diameter of from 5 to 7 mm. and were perfectly round. They were removed and the dura was

One is, of course, reminded of Ribbert's experiments of puncturing the nucleus pulposus of intervertebral discs. This tissue, ordinarily held in check by solid enclosure, seems to regain its proliferative quality when released. However, such growths were all quite small and of the benign type.

The growth in our case had its center to the right of the union between first and second sacral segments. The intervertebral disc is here not only the largest among the sacral ones but persists the longest. This may have some etiologic importance.

To sum up: The chordoma in our patient showed up on the surface of the sacrum, first in front, and later on the posterior side by growing along the right contour of the sacral canal. It

progressed extradurally under the lamina of the fifth lumbar vertebra and also intradurally by a bunch of beads on long and very thin, thready pedicles. This latter form of extension I did not find mentioned in other reported cases.

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DIVERTICULITIS OF THE COLON*

RALPH EMERSON WEIBLE, M.D., F.A.C.S.

Fargo, North Dakota

SINCE congenital diverticula of the colon, or the traction-pulsion type, are rare, it is natural that when we speak of diverticulitis of the colon we mean inflammation of the acquired variety.

The congenital type of diverticula is relatively large. The acquired is small: the size of a small shot, often the size of a pea, seldom as large as a small cherry.

The acquired diverticula are most frequent in the distal portion of the bowel, becoming less frequent as the cecum is approached, and in the cecum they are very rare. Where many are present they may be arranged in two longitudinal rows.

From the appendix base, the three longitudinal muscle bands separate and extend about equidistant along the full length of the colon to the rectum. One longitudinal muscle band is at the site of the attachment of the mesocolon and hence is named the tenia mesocolica. The other two are often called the lateral bands. In the transverse colon, the mesocolic band, and likewise the mesocolon, is posterior, and the

lateral bands are above and below. In the right and left colon, the mesocolic band is posterior and medianward, as is also the mesocolon, but the lateral bands are anterior and postero-lateral.

Mailer states: "The exact situation of diverticula in relation to the circumference of the bowel is remarkably constant. They appear between the tenia mesocolica and the lateral bands, closer to the latter than the former." This is the place where the blood vessels penetrate the muscle fibers. If Mailer's statement is correct, then the lateral bands are of interest to us and should be identified when one examines a bowel for diverticulitis.

Diverticulitis is encountered more often than we are led to believe. It is not a rare disease, but is often undiagnosed.

As long as the diverticula are empty no symptoms are produced. The first mild symptoms are caused by the sacs becoming filled with fecal matter. Later this becomes dried and hard. If inflammation sets in, the symptoms begin. An acute inflammation of a solitary diverticulum looks like a localized inflammation in the side of the bowel wall. If the acute inflammation

*From the Dakota Clinic, Fargo, North Dakota.

spreads, more of the circumference of the bowel may be swollen, hard and reddened. When multiple diverticula are involved in a bowel segment, a larger tumor-like mass is produced. This



Fig. 1. Case 1. Congenital cecal diverticulitis.

may be more or less spherical, like a small orange, or longer and sausage shaped.

Diverticulitis rarely presents the picture of complete obstruction and seldom results in perforation into the abdominal cavity. However, I will present case histories where these conditions were found. Also, in perforative cases, the superiority of rectal drainage over abdominal drainage will be stressed. Most of the histories chosen were of surgically treated patients, and were selected since the gross pathology was actually seen.

Case 1.—Mrs. E. G. R., aged fifty-four; stated that for two months she had had a pain in the right lower quadrant with considerable gas. This pain is made worse by riding over rough roads, and when she lies on her left side she feels a drawing in the right side. Bowels are regular. The laboratory examinations were negative, except that x-ray showed a rounded pocket coming off of the cecum in the region of the appendix. This pocket was about two inches in diameter. Physical examination was negative, except for a definite tender area in the right lower quadrant. No mass was felt, perhaps because the woman was quite fleshy. At operation a hard mass the size of an apple was found in the cecum near the appendix. A partial resection of the cecum and lateral anastomosis of the terminal ileum and cecum was done. Recovery followed. Examination of the mass showed it to be a large diverticulum of the

cecum, with markedly thickened walls, and containing a fecalith nearly as large as a golf ball. This was considered to be a congenital diverticulum.

I think a safer operation would have been to have done a double-barreled resection of the terminal ileum and cecum with closure later. Congenital diverticula are not limited in their size as are the acquired variety. Loose bowel movements, so common in sigmoidal diverticulitis, are usually not present when the disease is in the proximal colon.

Case 2.—Mr. J. D., aged thirty-five, had an acute attack of pain in the right lower quadrant sixteen hours before he was seen. He had been nauseated and had vomited once. Examination: Temperature, 100.5; pulse, 90; respiration, 22; w. b. c., 14,000; urine, normal. There was marked tenderness over the cecum and definite muscle spasm. Diagnosis: acute appendicitis. At operation the appendix did not look diseased, but was removed. On the anterior-mesial wall of the cecum, four inches from the lower end, was a pea-sized abscess. It showed grayish-white through the reddened peritoneal covering. This was buried with two purse-strings. Post-operative diagnosis—acute diverticulitis of the cecum. Convalescence was prompt.

It would have been impossible to have diagnosed this condition before operation. Again is to be noted the absence of loose bowel movements. Acute diverticulitis in the right colon is rare.

Case 3.—Mr. D. B., aged fifty-four, a heavy-set farmer, came to me many years ago. He complained of a dull pain in the lower left side which had persisted for years. He was in the habit of taking frequent enemas to get relief from gas. Two weeks before I saw him he had eaten a lot of stuffed dates, had more distress than ever, and then came asking for relief. The abdomen was markedly distended. Abdominal and rectal examination suggested the presence of a mass in the lower left quadrant. Exploration revealed, in the lower sigmoid, a hard, reddened, symmetrically rounded mass the size of an orange, with adherent fatty tags. A diagnosis of diverticulitis was made and a colostomy performed. Recovery was prompt, but the patient was very dissatisfied. He had never heard of diverticulitis, and did not accept the diagnosis. He resented the nuisance of caring for the colostomy and did not come back for further check-ups. This state of mind resulted a year later in his consulting an eminent surgeon who explored him and told his family that he had cancer and that only a short life expectancy remained. This diagnosis was easy for them to understand and was accepted as the true one. However, contrary to the family's expectations, his health became robust, and four years later he returned to his last surgeon for closure of the colostomy. Unfortunately,

he died the second day after a resection for diverticulitis. The diagnosis was confirmed by the pathologist's report.

This history shows that experienced surgeons can easily become confused in the differentiation between sigmoidal diverticulitis and carcinoma. Alvarez describes a similar case but with a different ending. At exploration with colostomy, the patient was told that he had a cancer that could not be removed. He took his troubles to the Christian Scientists and, as his health continued to improve, he gave the credit to this cult. In fact, he was so grateful that he donated a church to them. Cancer is a neoplasm; diverticulitis is an inflammation. To diagnose diverticulitis, look for the signs of the inflammation: the redness, the rounded swelling, the adherent fatty tags, swelling of the adjacent mesocolon and, if acute, patches of exudate. If the operator cannot come to a decision, a biopsy should be secured. Moynihan, and later Finney, believed that some of the earlier reported cures of cancer of the colon really followed removal of tumefactions caused by these inflammations.

Case 4.—Mr. W. B. H., a healthy-looking man of seventy-two, was seen in October, 1932, complaining of blood in his stools. He had noticed this during the previous 10 months. Lately he has suffered from gas and constipation. He would feel like having a bowel movement and sometimes only a little blood came. His hemoglobin was 50 per cent; r. b. c. 4,080,000; w. b. c. 8,000. The skiagraph showed a marked filling defect in the lower sigmoid, and, near by, diverticula. Proctoscopic examination revealed a hard, ulcerating, bleeding growth. A resection of the bowel was made and the growth proved to be an adeno-carcinoma which filled the lumen of the bowel so that only a very small opening remained. For a year he had fine health; then he was annoyed by daily loose bowel movements for two weeks. In the summer of 1935 he again had loose bowel movements but also a dull pain in the lower left quadrant. Disturbing thoughts of a recurrence of his cancer worried him. Examination showed normal blood tests, but he was tender over the sigmoid. The fact that he was known to have diverticula, together with the characteristic history, leaves no doubt that he was suffering from attacks of diverticulitis. Now, with his cancer cured and dietary measures controlling the diverticulitis, he plays golf in California in the winter, and in Dakota in the summer.

Case 5.—Mr. G. A. L. was a rather slender bookkeeper, thirty-four years of age. He had had moderate abdominal pain, took castor-oil and stayed in bed a day. One month later, he had a more severe attack, accompanied by vomiting, chills, fever and loose stools.

The pain was felt below the umbilicus and the tenderness extended downward into the left lower quadrant. His physician reported that the general examination was negative, as was the search for parasites in the stools. However, a little bright red blood was present



Fig. 2. Case 4. Carcinoma and diverticulosis of the sigmoid.

in some of the movements. Following a colon ray, it was reported that there was an abnormal narrowing near the hepatic flexure; otherwise there were no definite abnormalities. At this time a consultant suggested the possibility of a malignancy. The patient felt well some days and on other days would have five or six loose movements. Two months later a colon ray was made at a different institution. The interpretation here was that a filling defect could be seen in the fluoroscopic examination, but not in the skiagraph, and that the skiagraph showed a diverticulum of the sigmoid. Called in consultation, I diagnosed diverticulitis and advised medical treatment. Unfortunately, the months of uncertainty in the diagnosis and the various opinions of consultants had fixed in the minds of the patient and family the belief that cancer was the cause of the illness and no argument advanced could change their minds. The attending physician asked me to explore the patient and settle the matter. At operation was found a band fixing the hepatic portion of the colon to the liver and causing the colon defect previously found. In the wall of the lower sigmoid were eight to ten small, hard objects ranging in size from small bird-shot to the size of a small pea. These were fecaliths in diverticular sacs. The diagnosis confirmed, the abdomen was closed and treatment outlined. The patient has done well since.

As is shown in this instance, x-ray may be of little value in diagnosis and may even help to obscure it. However, there should be little diffi-

culty in making the diagnosis if we know the symptoms and findings present in diverticulitis.

Case 6.—Mr. J. W., aged forty-one, a heavy-set farmer, for three years had had discomfort in the right lower quadrant, associated with gas. Lately he had



Fig. 3. Case 7. Acute obstruction in the sigmoid, caused by diverticulitis.

felt some discomfort in the lower left quadrant. He had had two or three loose movements in the morning and, about once a year, diarrhea for a day. All laboratory reports were negative, except that he had no free acid in the gastric contents. X-ray examinations of the stomach, gallbladder, and colon were reported negative. Stool examinations showed a few endameba histolytica. Under what seemed appropriate treatment he improved and was fairly well for a year. Following a month of discomfort in the central abdomen, he came to the hospital the second evening of an acute abdominal attack. He seemed to be very sick and complained of the pain most in the lower central portion. His temperature was 100; pulse, 105; white blood cells, 16,000. Examination showed a distended abdomen with muscle spasm and point of greatest tenderness in the lower central part. The diagnosis was acute abdomen. Diverticulitis was thought of, but acute appendicitis seemed at the time the most likely cause. For some reason which seems strange now, a rectal examination was overlooked. On opening the abdomen, a large, white appendix was found and a mass the size of a billiard ball was present in the lower sigmoid. It was just below the promontory of the sacrum. It was hard, smooth, symmetrical and reddened. The fatty tags were adherent and the mass was carefully inspected for a threatened perforation, but it was not found. A drain was inserted and the abdomen closed. A few days later, pus with a colon odor began to discharge. Nine days later it was evident, from the examination, that he was not doing so well and that a considerable amount of pus was present in the pelvis.

This was evacuated through the anterior rectal wall and a self-retaining tube was inserted with the lower end protruding through the anus. He improved and went home. He was home but a short time when again he had an acute attack and returned to the hospital. An accumulation of pus could be felt in the pelvis again, and through the former rectal incision a forceps was thrust and a tube inserted. Following the evacuation of this pus, no more abscesses formed. Three months later, however, he returned to the hospital with an obstruction. Under spinal anesthesia, two loops of ileum which had become adherent to the old abdominal scar were found. These were freed. The examination of the sigmoid showed only a slight thickening and a few adhesions. This man loved to eat. He had to have some small attacks of pain before he would stay on his diet. His operation was five years ago and he now stays well.

The differentiation between the acute attack of appendicitis and acute sigmoidal diverticulitis is not always easy. Too much emphasis cannot be put on the rectal examination and history. In this patient was seen how the diverticulitis looked before it perforated into the abdomen, demonstrated the value of rectal drainage, and showed how the inflamed area of the sigmoid looked after healing had taken place.

Case 7.—Mr. W. F. P. was a heavy-set farmer of fifty-four. For many years he had had two or three loose stools a day, but had otherwise been well until four days previous. The bowels felt as if they should move but only a little blood appeared when he went to the toilet. Examination showed a greatly distended abdomen, and a mass could be felt per rectum. Proctoscopic examination showed an obstructing growth in the wall of the rectum, about 18 cm. up. The temperature was 99.8; pulse, 96; blood pressure 164/110, and the leukocyte count 19,450. With the diagnosis of obstruction of the sigmoid, probably due to diverticulitis, an exploration with colostomy was done. A hard mass, four inches in length, was present in the lower part of the sigmoid. This disappeared within some weeks following the operation. He intends to have the colostomy closed. In all probability, obstruction could have been avoided if proper medical care had been taken earlier.

Case 8.—Mrs. O. J. S., aged sixty-eight, plump, a farmer's wife, first had an attack of pain one year previously. This lasted all night and she was very sore on pressure in the lower middle part of the abdomen. Occasionally, she had had discomfort for a day or two. One week ago she had another attack. As this was getting better, an acute exacerbation recurred the day before I saw her. Her temperature was 99; pulse, 78, and the laboratory tests were normal, the white count being only 7,200. Examination revealed a plum-sized, hard, immobile growth which could be felt through the rectal wall and was anterior to it. The diagnosis was pelvic tumor, and exploration advised and accepted.

At operation, under spinal anesthesia, the mass was found to be in the lower sigmoid. It was slightly adherent, but stripped loose easily and was brought into the wound for examination. Three or four inches of the sigmoid was involved. It was not woody hard, but

examination was essentially negative except for abdominal scars and a small, tender mass in the region of the left ovary. The proctoscopic examination was negative, except for mucus. The x-ray examination showed pyloric adhesions and the descending colon did not

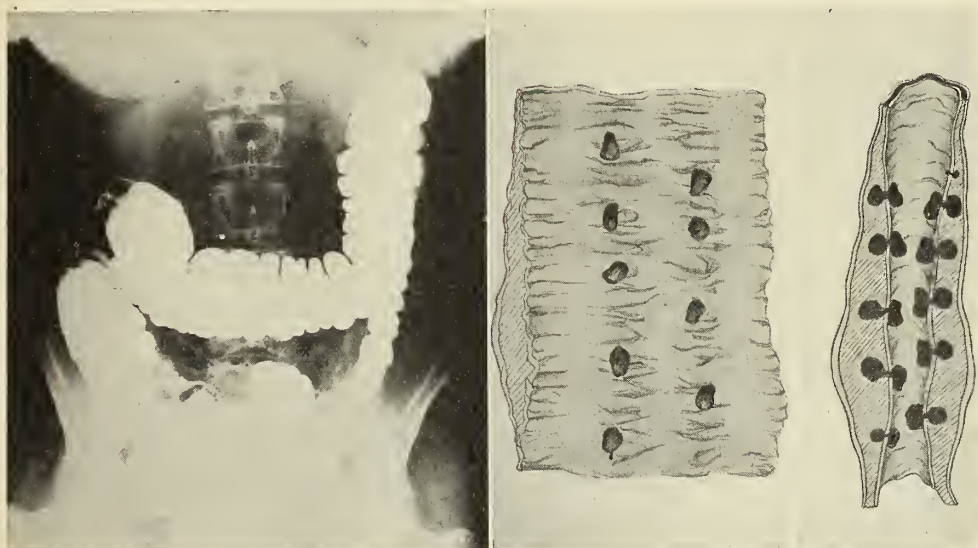


Fig. 4. Case 9. *A*, Diverticulitis of sigmoid not visible by x-ray. *B*, Sketch of condition found in resected sigmoid.

edematous, and the fatty tags and the adjacent meso-sigmoid were swollen. The patient, on being questioned, stated that she was tired of abdominal discomfort and acute attacks of pain and was willing to have a colostomy performed when told that this could be closed later. This was done. Follow-up examinations showed a decrease in the size of the growth and disappearance in about four months. One year after the operation, the colostomy was closed. She remained perfectly well for four years. Then she had several attacks of discomfort in the lower abdomen, lasting a few days. Contrary to advice, she, at no time, had taken any particular care of herself. A year later she reported that she had been obeying directions and was very well.

This case shows that a diverticulitis can be confused with a pelvic tumor, especially if the patient is a woman. Also it shows what we may expect a colostomy to do. A colon ray might have led to the correct diagnosis.

Case 9.—Mrs. R. E. S., aged forty-eight, was seen in 1928, complaining of attacks of loose bowel movements. These had persisted despite operations for gallstones, appendix removal, partial ovariectomy, and suspension of the uterus, performed in another city. Yearly she would have an attack which would last a week, but during the past year she had frequent recurrences. These were accompanied by soreness in the mid-abdomen. The stools contained mucus, but no blood or parasites. She had an achylia and secondary anemia, and was much annoyed by gas. The physical

retain the barium well. There were no filling defects, nor smoothing out of the haustrations. The roentgenologist gave an opinion, however, that the patient had colitis. With the aid of diet, iron and dilute hydrochloric acid she was improved for two years. Then she had an acute abdominal attack accompanied by a day of diarrhea. She had been constipated and was given mineral oil. What seemed to be the left ovary was more tender. Again she felt better, but returned in 1932, stating that she had been ill for two months with pain in the left lower quadrant and marked constipation. The pelvic mass was more tender and somewhat larger. The x-ray report stated that there was temporary holdup to the barium enema going into the sigmoid, but that no diverticula or marked narrowing could be seen. The patient was tired of her trouble and consented to have the pelvic mass operated upon.

Operation: The pelvis was explored and a long, sausage-shaped tumor was found in the lower sigmoid. In one part there was a hard, dimpled area. Freeing the peritoneum on both sides of the mesosigmoid, the mass was brought out of the abdomen through a small left-sided incision. Three days later this portion of the bowel was excised and clamps applied to the two open ends. Later on, the bowel was closed, freed, and dropped back into the abdomen. The specimen showed a seven-inch segment of sigmoid which, when opened, showed the following interesting picture: The wall of the bowel was markedly thickened. Arranged in two rows parallel to the long axis were nine fecaliths averaging one-half to five-eighths inch in their longest diameters and projecting well into the lumen of the

bowel. They were shaped like dumb-bells, the handles extending through the muscular coats of the bowel and expanding within the diverticula to about the same degree as into the lumen of the sigmoid. Eighteen months later she had an attack which was probably

wards between the layers of the greatly thickened bowel wall until a softened area was reached. A Penrose drain was inserted into this necrotic center. The effect was dramatic. The temperature went down, no further chills and sweats followed, pus discharged

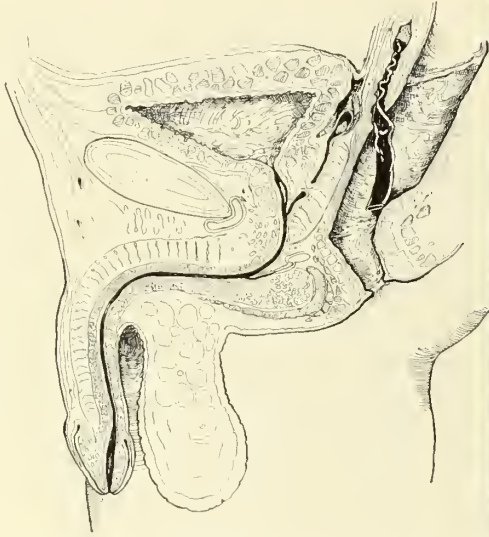


Fig. 5. Case 10. *A*, Sketch of operative procedure of draining abscess directly into rectum. *B*, Condition found on subsidence of acute symptoms.

diverticulitis. There was some tenderness in the left lower quadrant, and a colon ray showed a shadow suggestive of a diverticulum. She was again seen in June, 1936. She has no trouble with the abdomen.

The history of this patient is presented with some detail, since it shows many points of interest in symptoms, findings, and treatment. Resections of the sigmoid for diverticulitis are seldom indicated. In this instance, I think it was justified.

Case 10.—A. L. M., a well-nourished man of seventy-six, began having symptoms of a slight diarrhea six weeks before. A few days after the onset he had a chill and slight discomfort in the left lower abdomen. A day or two later a mass could be felt just above the prostate, extending upwards and towards the left side, which could also be felt through the abdominal wall. Persistent, irregular fever set in, and the discomfort increased. Gradually he became worse, and chills, followed by heavy sweats, developed. He was a very sick man, and it seemed that he must have further help if he were to survive. Under gas anesthesia, on December 6, 1933, an attempt was made to drain the diverticulitis through the anterior rectal wall. A week later, as no improvement followed, a second attempt was made. As the diverticulitis mass was low down, and the swelling could be reached with the finger, an opening was made through the rectal mucosa directly into the lower part of the mass, and, with forceps and finger, blunt dissection was carried up-

freely into the rectum for many days, and recovery followed. This patient has watched his diet and remains well.

So far as I can tell from a search of the literature, the method used in this case is original. In the occasional case in which the abscess occurs in this location, and when the symptoms warrant, rectal drainage is a surgically sound procedure.

Case 11.—Mr. M. H. A., a heavy-set man of fifty, had been troubled by gas for an indefinite period. He developed an acute pain in the lower central abdomen which increased in severity and finally localized in the lower left quadrant, where an extremely tender mass could be felt, parallel to the inguinal ligament. This could also be felt per rectum. He looked very ill and his fever stayed around 103 and 104 degrees for ten days. The leukocyte count rose to 18,000 and gradually subsided along with the fever. Very strict diet, heat and Russian mineral oil was the treatment, and he remained in bed a month. Four months later the mass, although small, was still palpable. A colon ray made at this time showed a marked filling defect in the lower descending colon and upper sigmoid. Following the expulsion of the barium a diverticulum could be seen. Three months later the diverticulum still showed plainly and there was still considerable narrowing. For over a year he had soreness at times. This gradually

left him and now, five years since the attack began, he stays on his diet and he remains well.

This patient shows that even in the very acute cases of diverticulitis perforation may not occur and that symptoms do subside under good care.



Fig. 6. Case 11. A, Abscess tract after acute symptoms had subsided. B, Stricture present three years later. Patient otherwise in good health.

However, this man was ill a long time and disabled still longer. If I see such a patient again I shall consider the possibility of draining the diverticulitis into the bowel.

Summary

Diverticulosis is easy to diagnose. The skiagraph shows the multiple sacs. Diverticulitis is seldom shown by the x-ray as barium cannot penetrate into the already filled diverticula. Only when the bowel wall is greatly swollen and consequently the lumen narrowed, will a picture show any changes. Of course, empty diverticula in the neighborhood of such a narrowed area in the bowel suggest diverticulitis.

It is usually impossible to diagnose diverticulitis of the right colon. The symptoms are the same as those of appendicitis, and in all probability an operation for appendicitis will take place. However, the correct diagnosis should not be overlooked at operation.

To make a diagnosis of diverticulitis, first rule out colitis, cancer and, in women, tumor of the adnexa.

Colitis can be excluded by the persistence of

symptoms, by proctoscopic and stool examinations and by the x-ray.

Cancer is not always so easily excluded. A tumor may be present, but this may also be true of diverticulitis. At x-ray examination, a filling

defect may be seen which can be easy or difficult to differentiate. While blood may be present in the stools in both diseases, fortunately the clinical course is different. Cancer is painless. If it occurs in the right colon, gas disturbance, loss of weight and anemia follow; if in the left colon, gas disturbance and, eventually, obstruction, are the common symptoms.

In diverticulitis we should be able to make a diagnosis even when x-ray examination is of little or no help. The proctoscopic examination may be negative, and the stools may or may not show a little blood. It is then that we depend upon the history of the symptoms and results of our examination of the lower left quadrant.

Attacks of disturbances from gas and loose bowel movements, accompanied by soreness in the left side of the abdomen with relief between attacks, always suggest the possibility of diverticulitis. If the attacks increase in severity, are accompanied by more pain, fever and chilly sensations, diverticulitis is a probability. If a tender mass can be felt just above the inguinal ligament or per rectum, diverticulitis is a certainty.

Acute diverticulitis with its sudden onset close-

ly resembles, in every way, acute appendicitis. The greatest tenderness and muscle spasm, however, is over the sigmoid instead of the cecum, and if tenderness is found per rectum it is on the left side, or in the center; not on the right side.

Diverticulitis should be treated medically, which, although it does not cure, is the most satisfactory method with a few exceptions.

In perforative diverticulitis, pelvic drainage through the rectum, or through the vaginal vault in women, is by far the best operation. There is seldom an excuse for a laparotomy. If the diverticulitis is very low in the sigmoid so that it can easily be felt per rectum and a perforation threatens, incision of the mucous membrane and

blunt dissection upwards between the layers of the bowel to the focus of trouble should be considered.

Occasionally where a tumorous mass persists after efficient and prolonged treatment, and symptoms are ill controlled, a resection by the double-barreled method, with later closure by the clamp method, should be done. Colostomy is also valuable in the persistent case. However, this, too, should be closed after some months of rest to the diseased bowel.

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BENZEDRINE IN THE TREATMENT OF NARCOLEPSY*

M. J. SHAPIRO, B.S., M.D.

Minneapolis

THE introduction of benzedrine-sulphate in the treatment of narcolepsy has stimulated a new interest in this disease. In December, 1935, Prinzmetal and Bloomberg⁵ reported very favorable results in the treatment of nine cases of narcolepsy with this new drug. In March, 1936, Ulrich, Trapp and Vidgoff⁶ reported equally favorable results in an additional six cases. Alles¹ has pointed out the close relationship in structural formula between benzedrine, ephedrin and adrenalin and has indicated that benzedrine has a much more profound central stimulating effect and less peripheral effect than either ephedrin or adrenalin. This marked stimulating effect of the central nervous system suggested to Prinzmetal,² who had worked with Alles on the pharmacology of benzedrine, that this new compound might be effective in the treatment of such conditions as narcolepsy.

Benzedrine was first introduced clinically as an inhalation treatment for the relief of nasal congestion. It was noted that when the benzedrine inhalor was used too frequently it had a tendency to produce insomnia.

Narcolepsy³ is a condition characterized by attacks of diurnal sleep and in the majority of in-

stances is accompanied by seizures of sudden muscular weakness causing profound helplessness. These attacks are known as cataplexy. The cause of narcolepsy is unknown but it has been suggested that there might be some relationship between this syndrome and encephalitis and also that narcolepsy might be secondary to head injuries. However, in the majority of instances, no definite cause has been determined. It has been observed that the disease occurs most commonly in young individuals, the majority of instances occurring under the age of thirty, and also that it is more common in the male. It is more prevalent during adolescence. It may begin with attacks of either irresistible sleep or cataplexy. Daniel³ in his excellent monograph on narcolepsy has included under this heading many milder cases of sleepiness occurring during the day. In the far advanced case, the attacks of sleep plus the seizures of cataplexy cause almost complete incapacity. Many times during a day, the patient is attacked by a desire to sleep and these attacks last from a few minutes to as long as one-half hour. The cataplectic attacks commonly follow any emotional excitement such as laughter or anger. During such excitement, the patient becomes weak, is unable to support

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himself, and may even fall to the ground. Narcolepsy is a chronic condition and may last a lifetime. Physical examination usually proves negative. Blood studies, x-ray of the skull, and various other investigations have given no clue as to a specific etiology. A low basal metabolic rate and a history of a rapid increase in weight at the inception of the disease is common. Until the introduction of ephedrin-sulphate in treatment by Janota⁴ in 1931, no successful treatment was available. Ephedrin produced marked improvement in symptoms in many cases but unfortunately the effect did not last and the patients found it necessary to gradually increase the dose. The deleterious effects of ephedrin as well as the excessive cost of the drug were reasons given by narcoleptic patients for discontinuing the use of the drug. To date, fifteen cases have been reported in the literature as having been successfully treated with benzedrine; these unusually favorable results have prompted the reporting of experience in two additional cases of narcolepsy treated with benzedrine.

Case Reports

Case 1.—The patient is a seventeen-year-old male high school student. For the past eight years, he has complained of attacks of sleep and also spells of weakness on excitement. The only relevant fact obtained in the family history was that his mother often fell asleep several times during the day whenever she sat still for any length of time. The mother gave no history of cataplectic attacks. The patient had had the usual childhood illnesses. In early childhood, he had sustained a severe blow to the head which probably had no relationship to the present complaint. The patient also stated that he always drank an unusually large amount of water and urinated frequently. At about eleven years of age sudden attacks of muscular weakness coming on when he was made to laugh were the first real symptoms of his present illness. He would suddenly become limp all over and often the weakness would be of sufficient severity to cause him to fall to the ground. These attacks lasted only a moment or two and he recovered immediately. He related one instance when he was sitting on a curb with other boys and some one told a funny story. He began laughing, lost complete control of himself, fell backwards, bumping his head on the sidewalk, lacerating his scalp. He was able to stand up almost instantly and run to his home. A few months later, he began to complain of attacks of sleep which were irresistible. When a desire for sleep overcame him, he simply fell asleep no matter what he was doing. He found it necessary to take a nap after breakfast before he went to school. He fell asleep many times during the day while in school and during the next few years he slept a great deal of

the time. He found himself falling asleep momentarily while walking or during conversation. Although previously he had been an average student, his school work became poor and his parents and teachers considered him lazy. The patient complained bitterly because his parents and teachers had hounded him all these years. At the inception of this disease, he gained considerable weight in a few months. He became depressed and gave up all his friends because he was ashamed of his inability to keep awake. He made every effort to keep from laughing, and if he thought some one might relate an amusing incident he would immediately walk away for fear that this might bring on an attack of cataplexy. He slept very poorly at night; became irritable and complained of terrifying dreams. During these years, he had been examined by a number of physicians who made various diagnoses and suggested many forms of treatment, all of which were unsuccessful. In September, 1930, he was examined at the Mayo Clinic, where a diagnosis of narcolepsy with cataplexy was made. A report from the Mayo Clinic states the following: "The patient was here for examination in September of 1930, at which time he was seen in consultation by Dr. John B. Doyle, who made a diagnosis of narcolepsy and prescribed ephedrin, $\frac{3}{8}$ grain t.i.d. General examination was negative. Urinalysis, blood counts, blood Wassermann, Von Pirquet test, vision and eye grounds, x-rays of the head and chest and the neurological examinations were negative." With the use of ephedrin his symptoms improved considerably for about six months. He did better at his school work and he was able to keep awake most of the day. However, he soon found it necessary to increase the dose to $\frac{3}{8}$ of a grain five times a day, and finally stopped taking the ephedrin because it made him extremely nervous. The cost also was considered excessive. The patient stated that he felt that he was much worse after stopping the ephedrin than before he began taking it. The attacks of sleeping and cataplexy became so frequent that rest periods were arranged in order to make it possible for him to continue to attend school. During the summer months, when he was able to take part in violent outdoor exercise, his condition improved.

When he was referred to me for examination, the patient was almost completely incapacitated. Physical examination in December, 1935, revealed an obese young man. He had a pasty complexion and appeared dull. He had a slight internal strabismus. The general physical findings were essentially negative. Blood pressure systolic 118; diastolic 80; hemoglobin 90 per cent; urine negative; the basal metabolic rate minus 24.

Through the courtesy of Dr. M. Nathanson, who was then carrying on some experiments with benzedrine, some of the compound was obtained and the patient was instructed to take 10 milligrams after breakfast and after lunch. The improvement was most remarkable. The daily number of attacks of sleep immediately decreased. He was able to keep awake during the greater portion of the day but still found that it was necessary to take a nap after each meal. The attacks of cataplexy disappeared almost entirely on this small dosage. After a month, the patient was instructed

to increase the dose to 20 milligrams after breakfast and lunch. With this dosage, the symptoms of the disease have entirely disappeared.

During the past five months, the patient has lost some thirteen pounds in weight. His appearance has changed from that of a dull, apathetic individual to one who is normally alert. It is interesting to note that in spite of the fact that his weight has decreased and that his general condition has so remarkably improved, the basal metabolic rate is still minus 22. The psychological examination made on April 18, 1936, by Dr. A. H. Hilden of the Child Guidance Clinic, Board of Education, Minneapolis, revealed that the boy had an I.Q. of 103. After taking benzedrine for a period of three months, he was again given a psychological examination and the examiner found him much more alert and an increase in one grade in the arithmetic computation score was noted. A report from the patient's various teachers revealed a unanimous opinion that the patient's general condition was markedly improved and that his tendency to sleep in class had disappeared. It had been hoped to carry on a psychological experiment with and without the use of benzedrine. The patient was given a number of placebo tablets and instructed to take these instead of his usual benzedrine for a period of three days. However, after one day, the boy refused to continue on these tablets and without consultation went back to the benzedrine so that it was impossible to determine whether or not the benzedrine affected his mental capacity.

The personality changes in this boy since the beginning of treatment with benzedrine have been most interesting. Whereas before December, 1935, the boy was almost without friends, refused to take part in any social engagements, was alone practically the entire time, since taking the benzedrine he has become very sociable, has made innumerable friends, has joined many social groups and has even been appointed program chairman of one of these groups. He has found this social life so engrossing that he has had very little time for his school work. On discussing with this boy the fact that his school work had not improved, he made the following comment, "After all, I have been asleep for the past eight years, and, while my teachers have promoted me, yet I learned very little. They passed me on only to get rid of me. This has made school work difficult for me now that I am again normal." Re-examination of the patient in May, 1936, revealed a tendency to be somewhat excitable. It was noted that he was unable to concentrate and it was my impression that the boy was receiving too much of the benzedrine. It was, therefore, deemed advisable to reduce the dose to 30 milligrams per day.

Case 2—The patient is a twenty-two year old male university student. He complains of chronic fatigue, pain over the heart, and attacks of sleepiness coming on during the day and lasting a few moments at a time. He also had had frequent spells of muscular weakness on excitement. The family history was essentially negative with the exception that his father, a man about fifty-five years of age, had a tendency to fall asleep when sitting quietly. The past history was un-

important. His difficulty began at the age of sixteen. There had been no acute illness or head injury preceding this onset. At this time, he noted that he frequently fell asleep, especially while sitting in the classroom and also immediately after meals. He soon noted attacks of muscular weakness on laughing, and stated that when he was emotionally aroused, he felt as if the muscles of his face became stiff and he was unable to talk. At one time, during a base-ball game he was suddenly excited and in attempting to throw the ball into the field, suddenly became limp. His arm dropped to his side and he was unable to continue for a moment. Many times he became "weak in the knees" on laughing or during sudden anger. He had fallen to the ground on two or three occasions. The condition was relatively mild and the patient was able to continue with his university work under difficulty. He stated that he often fell asleep while he was taking notes in the lecture room. On reading the notes later, he found the writing legible up to a certain point and then for a number of lines found nothing but scribbles. He also stated that on several occasions, when asked to recite, he heard the professor call his name but was unable to answer because he was apparently asleep. The patient was a well developed healthy young man. The physical examination was essentially negative. Blood pressure 120/80; urine was negative; hemoglobin 90 per cent; and basal metabolic rate minus 5. When this patient was first observed, the diagnosis of narcolepsy was not considered. Apparently the patient was not anxious to relate in detail his symptoms of sleepiness and cataplexy. It was only after discussing this condition with him several times that the actual condition was brought out. This patient has been on 20 milligrams of benzedrine-sulphate for the past two months with complete relief. He has not found it necessary to take a nap during the day at any time since taking the new compound. The cataplectic attacks have entirely disappeared.

Comment

There can be no question that the new compound, benzedrine-sulphate, is most effective in the treatment of narcolepsy. The fifteen cases reported in the literature to date and these two additional cases have all been most satisfactorily controlled with benzedrine. It is probably true that many mild cases of narcolepsy are incorrectly diagnosed, as happened in the second case here reported.

The possible toxic effects of benzedrine are not known. The drug has not been used long enough to be positive that no harm can come of it. It is not known whether or not the effect may be accumulative or possibly habit forming. However, Prinzmetal in a personal communication has stated that one of his patients with nar-

colepsy has used benzedrine for over two years; that the drug is still as effective as when started; that no deleterious effects have resulted; and that it has not been necessary to increase the dose. The first patient here reported has now been taking benzedrine for six months without any apparent ill effect and with no necessity for increasing the dose. In fact, in this instance, it has been possible to reduce the dose.

Benzedrine is a most powerful stimulant of the central nervous system. In mild doses, it does not increase the blood pressure markedly. It may produce some tachycardia and occasionally extra-systoles result from its use. It causes some dryness of the mucous membranes and seems to decrease the appetite. This may be one of the reasons for the loss of weight noted among patients using it. This compound has innumerable therapeutic possibilities. It is being widely used in various types of so called chronic fatigue, neurasthenia and in mild mental depression and allied conditions. In suitable cases of this nature, benzedrine has proved of remarkable value. However, as is true with all new

drugs, caution is necessary. As has been stated, the possible toxic effects of this drug are not known and until such information becomes available it would be well to use benzedrine in small doses and then very cautiously.

Conclusions

1. Fifteen cases of narcolepsy satisfactorily treated with benzedrine have appeared in recent literature.
2. Two new cases are herewith reported also favorably controlled with benzedrine.
3. The therapeutic possibilities of benzedrine are pointed out and caution in its use is stressed.

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BRANCHIAL CYSTS*

C. G. OCHSNER, M.D.

Wabasha, Minnesota

THE past year brought about a variety of experiences that, as an end-result, have left me with a deeper appreciation and a larger degree of satisfaction with my lot as a simple country doctor. As you know, I left my practice in December last year, and became associated with a surgeon in Chicago. Our relationship lasted but six weeks for it terminated by my associate's sudden and untimely death. Although a very brief period of time, it was sufficient to give me a perspective of what a very busy office in a large city entailed. Crowded waiting rooms, a continuous flow of patients through the office, made it impossible, in most cases, to give individual consideration. Long night office hours, busy mornings in the hospital, and traffic-jammed streets, composed the daily routine.

With this as a possible future daily life to be expected, I was glad to return to a country of-

fice and to live again. We experience greater enjoyment when things go well, but have more grief when things go bad. The cases that in my short experience in general practice seem to be the greatest trials are the obscure conditions. I am sure that all of you can immediately call to mind many such cases in the past that at the time were a thorn in your side.

It is true that today, with the ease of travel, it is a simple matter to refer patients to a specialist or large clinic for study; at times the solution of the problem is found. However, in many instances it is impossible at least for the time being to lay one's finger on any particular organic lesion and these patients return home and appear constantly in the office of their family doctor, with relatives and friends all clamoring for cause, prognosis, and results.

In a practice as limited as mine there have not been many outstanding cases of this nature.

*Presidential address before the Wabasha County Medical Society at its annual meeting July 9, 1936.

We have, however, one which has been, until recently, a great task.

On June 8, 1935, I was called to the home of a patient, a single male, thirty-one years of age, who complained of swelling and pain over the left lower parotid region. The pain was constant in character and exaggerated on opening the mouth.

At this particular time we were having a mild epidemic of mumps in Wabasha and this particular individual gave a history of exposure a number of times during the previous three weeks. He had, however, had mumps as a child.

There was present a mild pharyngitis and the patient complained of having had a mild upper respiratory infection for the past five days.

In spite of the history of a former mumps in childhood, I was satisfied the patient was suffering from an acute left parotitis, probably of epidemic type.

On the same evening he was admitted to the hospital and during his hospital stay of four days he had a mild fever for two days, when the swelling and tenderness disappeared.

The patient was entirely well for the next two weeks but on June 28, 1935, he again appeared at the office with a small amount of swelling over the inferior tip of the parotid gland with pain on opening of the mouth. He had a temperature of 99.2 degrees.

I then referred him to a nose and throat specialist. I felt that the patient must be having a recurrence of a non-specific parotitis, probably a salivary duct stone. Since the edema extended down over the angle of the jaw area, the consultant felt that both the parotid and the submaxillary glands were involved and reported there was no evidence of a salivary duct stone. After only a few days of mild edema, fever and pain, the patient recovered entirely, and no more was heard from him until August 17, 1935, when he again appeared at the office with an acute edema over the left angle of the jaw, severe pains, and a temperature of 99.2. Again he gave the history of the attack being preceded by a mild upper respiratory infection.

The blood picture at this time was normal except for a moderate leukocytosis of 12,600.

He was again admitted to the hospital and the treatment consisted of cold applications and oral hygiene. The induration this time seemed to involve the entire upper cervical triangle extending up to the lower half of the parotid region and posteriorly over the posterior auricular area. This firm induration persisted with a mild febrile course and leukocytosis of from 12,000 to 15,000 for about four days. It then began to disappear without any evidence of softening or fluctuation. He was discharged from the hospital on his tenth hospital day with still a small area of firm induration over the anterior cervical triangle directly beneath the angle of the mandible. During the following week, this induration disappeared leaving no palpable glands, masses or tenderness.

The patient was well until he again came to our office on September 29, with a rapidly developing induration over the same left parotid area, extending down

into the left anterior cervical triangle. This time there was no history of a previous upper respiratory infection. We again admitted him to the hospital. After two days of symptomatic treatment and gradual improvement the patient was referred to the Mayo Clinic for observation and diagnosis. The patient remained there for one week and returned home with the induration entirely cleared up, no palpable mass of tenderness remaining, and no definite diagnosis.

On November 30, 1935, the patient again came to the office with a mild flare-up of the same condition, but this time remained up and about, attending to his duties. This time he suffered only a small amount of pain and after ten days the induration had entirely cleared up.

On January 10, 1936, he was seen by Dr. Bouquet, with a mild flare-up which cleared up after a few days without disability.

On March 3, 1936, the patient again appeared at the office, this time with a very marked swelling and pain, complaining of considerable dizziness and headache.

Again he gave us the history of a mild upper respiratory infection, about five days prior to the onset of symptoms. He was again hospitalized and on March 8 a small area of fluctuation was noted about one inch below the angle of the mandible. On March 9, this area was aspirated and 10 c.c. of a thin, yellowish pus was withdrawn. No tubercle bacilli or other bacteria were found in the fluid. A specimen was sent to the state laboratory for guinea pig inoculation, which proved negative.

The following day, under nitrous oxide gas anesthesia, an incision was made over the fluctuating area and a large amount of similar fluid was evacuated. The pocket of the abscess seemed to point up to the tip of the parotid. The entire cavity was packed with iodoform gauze, the area of induration subsided rapidly, and the patient was discharged from the hospital, on March 21, 1936. For the next week the opening kept draining purulent material, and we kept up daily insertions of iodoform packs to keep the external opening patent. The wound healed very promptly, leaving no trace of any induration or mass.

The patient continued to be well until March 28, when, within a period of three hours, a severe induration returned accompanied by severe throbbing headaches, dizziness and local, dull aching pains. He was again admitted to the hospital and on March 30 the neck was again opened at the same site, with drainage of considerable pus.

This time the drainage constantly continued and an indurated mass remained palpable immediately beneath the angle of the mandible, extending up to the parotid tip. As long as drainage was maintained and the fistula kept open the patient was comfortable.

On May 7, under nitrous oxide and ether we injected the fistulous tract with methylene blue and incised the fistulous tract with a wide incision.

We traced a fistulous tract up to the parotid gland through the inferior tip of the gland, then directly posteriorly below the sterno-mastoid muscle. Below

this muscle and just above and lateral to the carotid sheath a small cyst was uncovered, about 3.5 cm. in diameter. The fistulous tract entered this cyst at its very superior aspect. The wall was about 2 mm. thick, and the entire cyst and fistulous tract was embedded in dense induration. The cyst was removed in its entirety after considerable difficulty. The cyst cavity contained a yellowish, thin purulent material. The pathological report on the specimen was "squamous epithelium lined cyst wall, a branchial cleft cyst."

The post-operative course was entirely uneventful and the patient was discharged on the eleventh post-operative day with the wound completely healed.

Earlier in the course of this man's history we had considered the possibility of a congenital cyst, branchial or epithelial, but felt that it could be ruled out since during remissions no mass or induration was palpable over the cervical region.

At the operation it was easy to understand why the cyst could not be felt during a remission, because its position was much too deep beneath the sternomastoid muscle to be palpated externally.

In reviewing the literature on lateral branchial cysts we find that during the first two weeks of embryonic life five branchial arches are formed on the lateral neck of the embryo. These produce ridges separated by grooves and correspond to the gill arches of the fish.

By the sixth to seventh week of embryonic life, four definite grooves and pouches are formed. The first two are much the larger and overlap the other three. These pouches close over and form sinuses and under normal conditions these sinuses close over and the epithelium is absorbed.

Infrequently a sinus may remain, generally the second, and form a cervical cyst. Likewise a pinching off and non-absorption of the endodermal lining of the pharyngeal pouch on the inside of the embryonic neck may produce internal cysts, which, if the wall is thin and breaks through, results in a branchial fistula.

The tonsils, thymus and parathyroid glands develop from the lining membrane of the embryonic pharyngeal side wall. Therefore, cysts of ectodermal origin have a squamous epithelial lining and cysts of endodermal origin have a columnar epithelial lining. Occasionally a cyst may have both types of epithelium linings.

Branchial cysts may be divided into four classes:

1. Cysts with no internal or external opening.
2. Cysts with a fistula opening internally.

3. Cysts with a fistula opening externally.

4. Cysts and fistulae with both external and internal openings.

Baily classifies them according to position as superficial, deep, auricular, parotid, sublingual, submaxillary, pharyngeal or tracheal. Others classify them according to the cleft giving origin.

In each case reviewed in the literature, the most constant is the pre-auricular with no tenderness or pain. As the cyst progresses in size, symptoms may occur from pressure. Hoarseness, coughing, difficulty in swallowing or breathing may be experienced, depending on the direction of the growth. Pain and acute induration are infrequent and always due to secondary infection.

Cysts, excepting those preauricular, are anterior to or under the sterno-mastoid muscle and have never been known to be bilateral.

Cysts with internal fistulae may give an intermittent history. The fistulous tract usually drains into or near the tonsillar fossa. It has several times been discovered only after a tonsillectomy. External fistulous openings are generally preauricular or submandibular. Cysts with both interior exterior fistulae are very rare.

To differentiate in diagnosis from adenitis it is well to remember that adenitis is generally bilateral, is accompanied by a history of upper respiratory or dental infection and tuberculosis, and bacterial examination usually establishes the diagnosis.

Where fistulae are present, x-ray examination following lipoidal injection may prove of some value. Tuberculous tracts are very irregular in outline.

Hemangiomas of the neck usually disappears upon pressure. Dermoid cysts of the neck may be differentiated by the x-ray and microscopic examination.

Clinically, it is difficult to differentiate a branchial cyst from a sublingual epithelial cyst, which may have an identical appearance. Microscopic examination is the only means of differentiation.

The only recommended treatment for branchial cysts is a complete excision of the cyst and fistula. One should be mindful that a branchial cyst has small pedicles and during enucleation these may be lost. Unless the entire cyst is removed, recurrence is the rule.

CASE REPORT

PERFORATED GASTRIC ULCER AND MECKEL'S DIVERTICULITIS

A. L. PERTL, M.D.

Canby, Minnesota

A SCHOOL girl, seventeen, was seen October 31, 1936, when she had an attack of so-called slight indigestion. Her appetite had been fair and she complained only of slight belching after meals. The bowels were normal. Following her visit she continued to work as usual at home and to attend school.

On November 3, immediately after finishing her lunch at school, she was seized with a sudden sharp pain over the entire abdomen, more marked in the lower right quadrant, which caused her to double up in severe agony. The attack occurred at 12:30 p. m. Her temperature when seen was 97.4, pulse 116, respiration 24. She had a marked pallor but no sign of collapse. This attack lasted about twenty minutes. On examination there was definite pain, tenderness and rigidity on the entire right side, more so from the navel downward. The urine and leukocyte count were normal.

She was immediately hospitalized but operation was delayed until the parents could be notified and their consent given. At 2:30 p. m. morphine sulphate gr. 1/6, atropine sulphate gr. 1/150 were given but within thirty minutes she had another similar attack of pain which lasted, however, only ten minutes.

At 3:00 p. m. she was taken to the operating room

and a right mid-rectus incision was made. Upon opening the abdomen slight watery fluid escaped containing some flocculent material. The cecum was markedly congested posteriorly, and over this area there was some adherent fibrinous exudate. The appendix was only slightly injected. Twelve inches from the ileocecal junction was found a Meckel's diverticulum, four inches in length and one inch in diameter, the proximal half patent and smooth while the distal half was closed and its peritoneal serosa thickened and papillary in appearance. The diverticulum was removed.

The incision was then extended upward and at once more exudate and injection was noted in the epigastric area. Further search revealed a perforation about one-eighth inch in diameter from an ulcer on the anterior surface of the stomach near the pylorus.

The ulcer area was about three-fourths inch in diameter. The perforation was sutured and the omentum plastered over the involved area. The abdomen was closed without drainage.

The patient made a rapid and uneventful recovery and was discharged from the hospital on November 13, 1936. A modified Sippy diet was recommended to be carried out at home.



A. W. ADSON, M.D.

President, 1937

MAY I wish all my colleagues a happy new year, and that their joys and successes for 1937 will outnumber their sorrows and disappointments. Although we have lived through times rendered strenuous by economic distress, it still behooves us all to continue with our studies in order to be informed on the progress of medicine. We should avail ourselves of postgraduate opportunities for study and we should attend county, district and state meetings whenever possible. Compensation for professional services is essential that we may live, but pecuniary compensation cannot compare with the personal satisfaction that comes in having made the correct diagnosis and in having instituted the proper treatment for those who consult us when sick and depressed.

EDITORIAL

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BUSINESS MANAGER

J. R. BRUCE, Saint Paul

Volume 20 JANUARY, 1937 Number 1

Lobar Pneumonia

CONSIDERABLE space in this issue of MINNESOTA MEDICINE is devoted to the subject of lobar pneumonia with emphasis on the serum treatment of the disease. Minnesota is about to follow the lead of other states, notably Massachusetts and New York, in a campaign for the purpose of reducing the mortality of the disease. This campaign includes drawing the attention of the public to the importance of caring for acute respiratory infections and the significance of the beginning signs of pneumonia: chills, fever, pain in the chest, and blood-tinged sputum. The attention of the profession is being called to the value of pneumonia serum, especially in Type I and Type II pneumococcus pneumonia. It has been

firmly established that the use of serum in these types of pneumonia will reduce the mortality of the disease 10 per cent, if used within the first four days of the disease and considerably more if used in the first twenty-four to forty-eight hours of the disease.

The decision of the State Board of Health to aid in the typing of cases and in providing for the free distribution of pneumonia serum to those unable to afford its relatively high cost, is highly commendable. The decision to limit the free distribution of the serum to typed individuals is reasonable.

A word of warning is perhaps in order as to the precautions necessary before horse serum is administered intravenously. Those known to be allergic to horses or who have had horse serum inoculations should not be given pneumococcus serum. All patients should have the preliminary conjunctival and subcutaneous test for sensitivity and the first intravenous injection should be small and given slowly in any event with adrenalin handy. The small volume on "Lobar Pneumonia and Serum Treatment" by Lord and Heffron, reviewed in this issue of the journal, is strongly recommended to those contemplating the use of pneumonia serum.

In our enthusiasm for serum therapy of pneumonia we should not forget the importance of rest and nursing in pneumonia. Morphine, or perhaps preferably codein, is the most valuable drug and an occasional enema rather than the use of cathartics is preferable. Oxygen therapy is life saving in some cases.

Artificial pneumothorax has given some promise of being of value, but has not been firmly established. Certainly it should not be attempted by the tyro nor without x-ray evidence of unilateral involvement.

It is unbelievable that bronchoscopy with suction should have even been suggested for the treatment of pneumonia in view of the pathologic process present.

Lobar pneumonia is a disease which merits publicity among the laity and profession and combined efforts should result in the saving of many lives.

Pneumococcus Typing by the Neufeld Reaction

THE typing of pneumococcus in the sputum has come to be an important laboratory aid in the diagnosis and treatment of lobar pneumonia. Pneumococcus typing had been considered one of the more difficult laboratory procedures until the introduction of the Neufeld reaction by Sabin in 1933. This method applied on the "typical" lobar pneumonia sputum is by far the simplest and perhaps the most accurate now in use. Sabin went so far as to claim that it is "a method that is simple and reliable, that dispenses with the use of mice, and by which a correct determination of type is possible within a few minutes after a suitable specimen of sputum has been obtained."

Since it is recognized that the effectiveness of serum therapy in lobar pneumonia is dependent upon the rapidity and accuracy of the method employed in pneumococcus typing and because the Neufeld reaction appears to meet these requirements in trained hands, a systematic campaign of introducing this method among the hospitals, laboratories and individual physicians and technicians through educational exhibits, motion picture demonstrations, circulars, and personal visits, has been carried on during the past twelve months.

These efforts, though mainly of a commercial character, are laudable and the thanks of the profession are due the promoters for their part in the broad program of pneumonia control.

One unfortunate result of this widespread and perhaps uncensored publicity, however, is the impression which has apparently crept into the mind of the average practitioner that the Neufeld reaction of pneumococcus typing is not only 100 per cent efficient on any sort of sputum but but can be performed by any individual, technician or physician, without proper training or necessary laboratory facilities. This is far from our actual experience. Many of the sputa submitted for this test are not "typical" while others contain too few of the organism or are mixed with too many contaminants to be suitable for the direct reaction. Consequently, in a number of actual instances, the immediate Neufeld reaction can not be obtained. Many of these sputa, when injected intraperitoneally into the mouse, within a few hours, yield a pure growth of pneumococci which readily permits the performance of the test.

Therefore, it would be highly desirable to culture routinely every specimen of sputum submitted for the direct Neufeld reaction, and inoculate the mouse for later typing. By this added procedure, its usefulness would be greatly multiplied. Parenthetically, it may be stated that this method may be admirably used on exudate from the pharynx in adults who are unable to expectorate or on material obtained on the swab from the throat of infants. Type I or II pneumococcus identified in this manner is almost certain to be the organism responsible for the pneumonia while pneumococci of other types are more likely to be saprophytic, and final diagnosis should be reserved until typing on the sputum could be obtained.

The Neufeld reaction introduced by Sabin is admittedly the most rapid and practical at our command at the present time. However, in order to derive the greatest possible aid from it (1) scrupulous care should be observed in selecting samples of the sputum and (2) when a negative result is obtained, it should not be considered as conclusive but (3) confirmation should be had through the mouse method (using the same technique), which can be carried out within a few hours.

The Neufeld reaction is a reliable diagnostic procedure only in experienced hands and where proper laboratory facilities are available.

KANO IKEDA, M.D.

Syphilis Control

IT IS not generally appreciated that syphilis has now supplanted tuberculosis in this country as the leading cause of death among the contagious and therefore preventible diseases. In 1934 there were some 17,700 reported deaths in this country from tertiary syphilis and the number was doubtless considerably in excess of this, for members of the profession are often loath to state syphilis as the cause of death on a death certificate. It is estimated that 7,000,000 individuals in this country have syphilis at any one time. When we consider that about 15 per cent of the inmates of asylums are there because of this infection, the number of congenital syphilitic patients who bear the stigma of the disease from birth, and the number of abortions resulting from the disease, we obtain some idea of the

toll that this one disease exacts in misery and expense in our country alone.

Syphilis control must be attacked from several angles. Its prevention is largely a sociologic problem; its cure, a medical one.

Education is an important factor in any proposed campaign. At the risk that familiarity breeds contempt the public must be informed as to the nature of the infection, its prevalence, mode of infection, and the fact that it can be cured. The indication of the recent change in attitude of the laity toward the public discussion of syphilis makes education on the subject more feasible.

Surgeon-General Thomas Parran, Jr., of the United States Public Health Service has recently launched a drive against syphilis. Considerable success may be expected from such a campaign if the results in Stockholm may be considered a criterion. As the result of an anti-venereal drive there in 1919, the number of new cases reported in one year has been now reduced from forty-four to two per 10,000 of population.

To further the cause of publicity, the American Social Hygiene Association has designated February 3, 1937, as National Hygiene Day. A meeting will be held on that date in New York City, which will be addressed by Dr. Ray Lyman Wilbur, president of the Association, and by Surgeon-General Parran. Similar meetings will be held on the same date all over the country and it is hoped that publicity will be furthered by a nation-wide radio hook-up to disseminate addresses on the subject by government officials and civic leaders.

The importance of measures directed towards the prevention of syphilis cannot be overemphasized. It should become well known, especially to the youth of this country, how the disease is contracted and the part that alcohol so often plays through its effect on self-control. How much the actual prevention of contagion by prophylactic measures should be emphasized has long been debatable but without doubt it has its place.

The stamping out of the disease (if this is possible) depends upon the coöperation of the medical profession, venereal clinics and public health authorities.

The present set-up for the control of syphilis is well conceived. Several factors, however, have

operated against its success. The medical profession has doubtless been remiss in the reporting of cases. Too many physicians fail to realize the importance of reporting this contagious disease. Only by knowing its prevalence is proper legislative appropriation likely to be obtained. Only by detailed reports on the part of physicians can sources of infection be traced and uncured patients contacted. Recently too, the United States Public Health Service has complained of the lack of coöperation in the reporting of cases on the part of health departments. Then again, the legislatures have been niggardly in their appropriation of funds for the social service work so important if this disease is to be controlled.

The present publicity campaign designed to call attention to the seriousness of the problem of syphilis, although it will not result in the stamping out of the disease, should bear some fruit and should stimulate all concerned, physicians included, to do their part.

The Use of Trichloroethylene for General Anesthesia

Trichloroethylene for use by inhalation in the treatment of trigeminal neuralgia is accepted for inclusion in New and Non-official Remedies. Recently, however, trichloroethylene has been used as a general anesthetic. The product used for this purpose differed from that used in the treatment of trigeminal neuralgia. It contained no added diluent or stabilizing agent and the boiling points were more closely defined. The evidence for the usefulness of this agent in general anesthesia consists of one experimental and one clinical report, both by the same group of workers. Jackson and his associates claim these advantages for trichloroethylene (for anesthesia): it is safe where there is any fire hazard (cautery), because it is noninflammable and nonexplosive; the fumes do not spread; and it is more pleasant than ether. Its chief danger lies in its rapid effect. The clinical report of 300 anesthetics and analgesias included twenty-five dental cases, twenty-five cases of removal of venereal warts and 198 cervical cauterizations. The authors state that as yet they have not used trichloroethylene in laparotomies or other major surgical procedures (except in experimental animals). The Council held that the available evidence does not justify the acceptance of trichloroethylene for use as a general anesthetic and postponed consideration to await (a) solution of the question of potential toxicity of decomposition products of the drug and (b) development of the evidence to substantiate the claims for its clinical use as a general anesthetic. (J.A.M.A., Oct. 17, 1936, p. 1302.)

UNIVERSITY OF MINNESOTA—CENTER FOR CONTINUATION STUDY

Post-Graduate Medical Institute

THE Center for Continuation Study of the University of Minnesota in coöperation with the Medical School and the Minnesota State Medical Association will offer a series of post-graduate medical courses for practicing physicians from January 17 to February 13, 1937. For some time the University has provided opportunities for extended graduate instruction through the facilities of the Graduate School and for short courses on the campus and throughout the state through the agency of the Extension Division. These medical courses, which will be offered by the Center for Continuation Study, are the first of their kind. They are planned primarily for practicing physicians who desire to spend a short period of time in serious and intensive study in internal medicine, surgery, pediatrics, obstetrics and gynecology. The Center for Continuation Study on the campus makes it possible for the first time for post-graduate students to attend school in their own building with their own living quarters, faculty, curriculum, and library facilities. In the past, it was necessary for practicing physicians in the northwest to travel great distances and with considerable expense to obtain the type of instruction which will now be offered near their homes. It is believed that our physicians will welcome this opportunity and for this reason everyone is urged to read this announcement with care so that there will be no disappointment through failure to properly enroll and profit from the instruction.

Subjects

The first week, from January 17 to January 23, will be devoted exclusively to instruction in Traumatic Surgery; the second week, from January 24 to January 30, to Obstetrics and Gynecology; the third week, from January 31 to February 6, to Pediatrics; and the fourth week, from February 7 to February 13, to Internal Medicine. It will be possible for any post-graduate student to enroll in one or more of these courses. Preference will be given to those enrolling in the entire series although single week reservations will be welcomed. Students are urged to live in the building, which provides splendid facilities for both instruction and living accommodations. In addition to the full-time enrollment, a limited number of physicians from

the Twin Cities and vicinity may be accepted for part-time enrollment. Registration details will be found in this bulletin.

Program

In planning the courses, the program has been divided on the basis of regions, systems, or types of disorders. New chairmen will be in charge of each day's program and the faculty which will assist them will function as a unit. In this way, each day's program will represent a complete practical survey of one subject. The courses will consist of lectures, clinics, demonstrations, ward walks, seminars, and practical work. A special feature will be the opportunity for each student to present his own problems to a group of specialists who are coöperating in this project. The faculty has been selected from the Medical School and the Mayo Foundation. While the fundamental phases of each subject will be discussed, the main emphasis will be placed on the availability of the material to the needs of the general practitioner.

Special Features

New registrations will be completed on each Sunday prior to the start of the week's work for those who have made advance reservations. Students are urged to come, at this time, and receive their programs and room assignments. The exercises will start each day at 8:00 A. M. and continue until 5:00 P. M. Three nights of each week, namely Monday, Wednesday and Friday, will be given over to special lectures in the Center. It is to be noted that all meals will be served in the Center. Although a garage is attached, the use of an automobile will not be necessary, as all of the instruction will be given in the Center, at the University of Minnesota Hospitals, or the Minneapolis General Hospital, which can be easily and quickly reached by streetcar or cab. Prospective students are urged not to plan any other activities while taking the courses, as, in addition to their own schedule, they will be expected to attend the regular university medical seminars, conferences, and other meetings which do not conflict with their special program.

The following advance program is submitted for consideration.

POST-GRADUATE MEDICAL INSTITUTE

Traumatic Surgery

January 17 to January 23, 1937

Courses

8:00 A. M. to 5:00 P. M.

	Subject	Faculty
<i>Sunday</i>	Registration and Room Assignment	
<i>Monday</i>	Spine, Rib and Pelvic Injuries	WALLACE COLE and staff
<i>Tuesday</i>	Shoulder, Arm and Elbow Injuries	O. J. CAMPBELL and staff
<i>Wednesday</i>	Forearm, Wrist and Hand Injuries	RICHARD R. CRANMER and staff
<i>Thursday</i>	Head Injuries	ARTHUR A. ZIEROLD and staff
<i>Friday</i>	Hip, Thigh and Knee Injuries	EDWARD T. EVANS and staff
<i>Saturday</i>	Leg, Ankle and Foot Injuries	EDWARD A. REGNIER and staff

Lectures

7:00 P. M. to 9:00 P. M.

<i>Monday</i>	First Aid in Fractures	CARL C. CHATTERTON
	Abdominal Injuries	O. H. WANGENSTEEN
<i>Wednesday</i>	Treatment of Shock.....	H. A. CARLSON
	Treatment of Infected Wounds and Fractures	M. H. MANSON
<i>Friday</i>	Treatment of Jaw Fractures.....	CARL W. WALDRON
	Nerve Injuries.....	W. T. PEYTON

Obstetrics and Gynecology

January 24 to January 30, 1937

Courses

8:00 A. M. to 5:00 P. M.

	Subject	Faculty
<i>Sunday</i>	Registration and Room Assignment	
<i>Monday</i>	Diseases Complicating Pregnancy.....	R. T. LAVAKE and staff
<i>Tuesday</i>	Diseases of the Urinary Tract in Pregnancy.....	R. E. SWANSON and staff
<i>Wednesday</i>	The Toxemias of Pregnancy.....	R. E. SWANSON and staff
<i>Thursday</i>	Genital Tract Tumors.....	S. B. SOLHAUG and staff
<i>Friday</i>	Cancer of Genital Tract.....	J. A. URNER and staff
<i>Saturday</i>	Difficult Labor.....	L. A. LANG and staff

Lectures

7:00 P. M. to 9:00 P. M.

<i>Monday</i>	Endocrinology in Obstetrics and Gynecology.....	J. C. LITZENBERG
	Questions and Answers.....	Staff
<i>Wednesday</i>	Relief of Pain in Labor.....	R. D. MUSSEY
	Questions and Answers.....	Staff
<i>Friday</i>	Obstetric Problems in Country Practice.....	MARTIN BERGHEIM, Hawley, Minn.
	Questions and Answers.....	Staff

Pediatrics

January 31 to February 6, 1937

Courses

8:00 A. M. to 5:00 P. M.

	Subject	Faculty
<i>Sunday</i>	Registration and Room Assignment	
<i>Monday</i>	Clinical Disorders of the Blood. Diagnosis and Treatment of Diseases of the Heart including Rheumatic Fever	W. H. THOMPSON, P. F. DWAN and staff
<i>Tuesday</i>	Newer Aspects of Nutrition and Metabolism.....	ARILD HANSEN and staff
<i>Wednesday</i>	Care of the Premature Infant and Special Problems of the Neonatal Period.....	W. RAY SHANNON, ROBERT ROSENTHAL and staff
<i>Thursday</i>	Diseases of the Upper Respiratory Tract and Lungs..	E. J. HUENEKENS, A. V. STÖESSER, L. R. BOIES and staff
<i>Friday</i>	Nervous Condition and Behavior Problems in Childhood	J. E. ANDERSON, B. BRYNGELSON, S. A. CHALLMAN, H. S. LIPPMAN, M. SEHAM and staff
<i>Saturday</i>	Contagious Diseases—Their Prevention and Treatment	E. S. PLATOU, C. A. STEWART and staff

POST-GRADUATE MEDICAL INSTITUTE

Lectures

7:00 P. M. to 9:00 P. M.

<i>Monday</i>	Pathogenesis and Treatment of Edema.....	IRVINE MCQUARRIE
<i>Wednesday</i>	Control of Infections of the Urinary Tract.....	HENRY F. HELMHOLZ
<i>Friday</i>	Convulsive Disorders in Childhood, including Epilepsy	IRVINE MCQUARRIE

Internal Medicine

February 7 to February 13, 1937

Courses

8:00 A. M. to 5:00 P. M.

	<i>Subject</i>	<i>Faculty</i>
<i>Sunday</i>	Registration and Room Assignment	
<i>Monday</i>	Modern Concepts of the Diagnosis and Treatment of Heart Disease.....	MOSES BARRON and staff
<i>Tuesday</i>	Diseases of the Respiratory Tract including the Modern Treatment of Pneumonia.....	REUBEN JOHNSON and staff
<i>Wednesday</i>	Gastro-Intestinal Disorders. Gastroscopy.....	J. B. CAREY and staff
<i>Thursday</i>	Common Errors in the Treatment of Diseases of the Skin.....	H. E. MICHELSON and staff
<i>Friday</i>	Practical Considerations in Endocrinology. Treatment of Diabetes.....	A. H. BEARD and staff
<i>Saturday</i>	Diseases of the Blood, including the more simple Laboratory Procedures available to the General Practitioner	FRANK J. HECK and staff

Lectures

7:00 P. M. to 9:00 P. M.

<i>Monday</i>	Psychiatric Pitfalls for the General Practitioner—in the Neuroses—in the Psychoses.....	J. C. MCKINLEY, R. W. AHRENS
<i>Wednesday</i>	Arthritis	To be announced
<i>Friday</i>	Significant Therapeutic Advances.....	Eight speakers to be announced

The complete schedule, including the names of all the instructors, their subjects, and the general university exercises, will be issued at the time of registration.

Facilities of the Center

The cost of room and board per week per person is given below:

Double room, without bath.....	\$13.50
Single room, without bath.....	15.00
Double room, with bath.....	15.00
Large bay-window, double room, with bath.....	16.00
Suite for four persons (two bedrooms, living room, and bath).....	17.00
Suite for two persons (bedroom, living room, and bath)	18.00
Special suite for two persons (bedroom, living room, and bath).....	19.00

This does not include the tuition fee for each course. Meals may be obtained separately by those not living in the Center.

Registration and Tuition Fees

The tuition fee for each week's course will be

\$15.00 for full-time enrollment. An advance registration fee of \$3.00 must be sent with the application. This registration fee will be deducted from the tuition after the registration is completed. Address all applications or requests for information to the Director of the Center for Continuation Study, University of Minnesota, Minneapolis, Minnesota. The enrollment is limited to thirty students for each week. After the enrollment is completed for any one week, applications which have not been filled will be given preference on succeeding weeks if the student so desires.

Certificate

Upon satisfactory completion of any one or more weeks of full-time enrollment a certificate of attendance will be issued by the Board of Regents of the University of Minnesota, upon the recommendation of the Director of the Center and the Chairman of the Post-Graduate Medical Institute.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

Nationalized Medicine Is It Coming?

WITH the presidential election over and a resounding endorsement of New Deal policies including the Social Security program recorded, the question arises among social service workers, economists, physicians:

Will the administration ask for health insurance to round out its social security program?

The program now covers old age, unemployment, public health, special aid to crippled children and to mothers and babies. The logical step ahead, according to some of the president's own men, is insurance against sickness.

No New Taxes

President Roosevelt assured the medical profession, in a pre-election speech at Jersey City, that it had nothing to fear; no change in our system of medical care would be contemplated without first consulting the profession. The wishes of the profession would be considered.

But November was hardly over and the election returns hardly in before stories predicting a move for sickness insurance began to appear in key newspapers. One was in the *Washington Post*, Washington, D. C., November 23. Another was in the *New York Herald Tribune*.

Both appeared to come from the same source, the Department of Information of the Social Security Board.

"Third Project"

"A third Federal welfare project—health insurance—," said the *Post*, "as large as either the old-age benefit insurance or the unemployment insurance programs, may be initiated by the Social Security Board in the near future, it was learned last night."

"The board has begun a study looking to proposal of this major addition to the social security system now operating. *Health insurance would provide both medical services and cash payments in partial compen-*

sation of wage-losses due to illness . . . (Italics are ours.)

"No bill has been drawn up on the subject and no commitments on sponsorship of health insurance have yet been made, a board spokesman said last night."

Economist Hamilton To Study

"Authority of Section 702 of the Social Security Act has been invoked to allow a research study of the subject and experts are now starting this work."

"Walton Hale Hamilton, economist, head of the research division and former member of the National Industrial Recovery Board, will direct the study. . . ."

"President Roosevelt's promise to avoid new taxes at the next session of Congress may mean the board's findings or recommendations will be withheld for a time. . . ."

Costs Would Be High

"Some experts hold that comprehensive health insurance would cost the equivalent of more than five per cent of pay rolls. . . ."

The tax for unemployment insurance under existing social security legislation will run to three per cent of pay rolls. This one is payable by the employees. Costs of old-age benefits will run to six per cent of pay rolls to be paid equally by employers and employees.

"Recommendations are not likely to contemplate raising the entire cost of health insurance from payroll taxes," the story concludes.

He Wanted Standard Hats

Readers of these columns will remember Walton Hale Hamilton, the apostle of standardization, who proposed at one time to standardize food and women's hats (*Medical Economics*, 1935). A scheme for extension of medical care which involves standardization of doctors and medicines will have no horrors for Mr. Hamilton.

Washington Merry Go Round, syndicated news service, which usually appears to have some basis for its observations, recently predicted a "knock down, drag-out fight on health insurance between administration men and the doctors."

Editorial comment has been general throughout the country, and most of it conservative.

Will Provoke Hostility

Said the *New York Herald Tribune* of Tuesday, Dec. 1:

"These objections (to health insurance by organized medicine) when examined in detail are enough to line up the average conservative American layman behind the medical profession in its hostility to compulsory insurance. But mere hostility is not enough. The gap in medical care must be studied and a sound remedy devised. Otherwise the 'socializer' who has the bit in his teeth will prevail. To save the medical profession and the nation from the afflictions of another European institution, about as well suited to our temper as peacetime conscription, it seems to us that doctors will have to consider forthwith, how medical nursing and hospital service can be rapidly extended in conformity with the public interest and with their professional ideals."

Obstacle

The chief obstacle, apparently, in the way of immediate introduction of health insurance into the social security program is the cost. It is, in fact, a tremendous obstacle and one which even experienced New Deal spenders may not be able to hurdle.

If a bill for health insurance should be introduced at Washington, new taxes would be needed and the President has promised that he will ask for no new taxes.

Oklahoma Flyer

If similar legislation is introduced in the individual states, it is almost certain to meet with an even less cordial reception in most states than a bill for a partial measure of state medicine, so-called, received in the Oklahoma legislature, recently.

A hospitalization bill was passed by a vote of 76 to 23, in the House according to the *Tulsa Daily World*. This was the state's first flyer into state medicine. It provided for hospitalization and treatment of indigents by the state and called, originally, for an appropriation of \$500,000 for 1937 and 1938. The bill passed the house with an appropriation of \$150,000 for the first six months of 1937, and drew down a bitter attack on the mounting costs of care for the indigent of which this last provision was apparently a final straw.

Sick Taxpayers

Said Representative Wallace Hughes of Texas county:

"If we don't curb these appropriations we are going to have all the taxpayers (beside the indigent) in bed."

Said Representative Tom Kight.

"We are dealing with the most paternal legislation that has ever come before this house. There is no more suffering today than there was three years ago. It has ever been thus and ever will be thus.

"Let's keep our feet on the ground. Let's not go wild on this thing. I want to see how this machinery is going to work out . . ."

The Machinery

The machinery was promptly geared to permit chiropractors, osteopaths, "drugless healers and practitioners" of all kinds to participate.

To receive care under the act it will be necessary only for the indigent to get the approval of the county commissioner of the district in which he resides.

Final decision on who is to receive care will rest, not with the county welfare boards and the county medical societies as originally planned, but with the county welfare boards and the county commissioners.

Prospect In Minnesota

It should be added, here, that the prospect for a much sounder handling of public welfare work is bright in Minnesota.

Indications are that the Interim Committee of the Legislature which is now preparing its report for the regular session will recommend free choice of physician for the indigent patient and proper medical participation in the determination of the needs of the sick poor.

It is hoped that official recognition of the responsibility of the community for payment for medical care of the indigent will again be explicitly acknowledged in this legislation. That any new state machinery will be set up for the delivery of medical care for the indigent is highly improbable in Minnesota, or that any machinery will be considered for the establishment of health insurance.

The Council Meets

AT the request of Surgeon General Thomas H. Parran, who has asked coöperation of medical societies everywhere, appointment of a Committee on Syphilis and Social Diseases was authorized by the Council. The committee will guide a public health education campaign on the subject, assist in the general campaign to secure early diagnosis and treatment. Dr. S. E. Sweitzer, Minneapolis, will be chairman of the new committee.

Classes for crippled children who are unable to attend regular schools are planned by Dr. H. E. Hilleboe, State Board of Control, to be financed with Social Security funds for crippled children.

The project was explained to the Council by Dr. Hilleboe and officially approved.

Union Doctors?

Incidentally, Dr. Hilleboe also asked the Council for its attitude on the question of physicians as members of trade unions. A number of physician employees of state institutions have joined unions organized by other employees of the institutions.

The Council went on record as officially opposed to membership of physicians in any unions though it could not forbid its members from entering such unions.

Membership of a physician in any organization that may require him to go on strike with other employees or which may in any way hinder him in the care of the sick was regarded by the Council as essentially a violation of the ethics of the American Medical Association. A stipulation in the contracts of state institutions was suggested forbidding neglect of duty on the part of physicians, in case of strike.

Medical Defense

A medical defense system for members works admirably in the New York State Medical Society, Dr. B. J. Branton, Chairman Medico-Legal Advisory Committee and Dr. W. L. Burnap, committee member, reported to the Council. A detailed written report on the New York system will be prepared, at the Council's request, for careful study as to possible feasibility at some future date in Minnesota.

* * *

Results of investigations by Councilors of a complaint that physicians were refusing to cooperate in securing physical examinations for nursery school children in WPA nursery schools were reported.

The investigations fortunately showed that, in practically all instances, the complaint was based, not upon fact, but upon misinformation or misunderstanding on the part of the nursery school administrators.

Nursery School Problems

The discussion brought to light the fact that there are now 32 nursery schools in Minnesota operated by WPA. Problem children of all kinds as well as children of relief clients are received as pupils. School lunches and extra nourishment are given to the children according to a carefully worked out plan for all the schools.

No funds are available through WPA for medical examination of the children. Special arrangements must be made in each community through county funds or special funds raised by local organizations or appropriations from local school boards to take care of this important phase of a nursery school program.

* * *

A request for names of physicians who might consider employment on a government resettlement project prompted a statement of policy on this and similar requests by the Council. The policy is this: that local men be used wherever possible, recognizing always that, in cases where the resettlement project is at a great distance from any local practicing physician, full time men must be employed for the purpose.

Refer To Secretary

Dr. Diehl, who was present at the Council meeting, asked for advice as to his own handling of requests for physicians that come to his office at the University. It was determined that, for his convenience and for better determination of the nature of each proposal for employment, all such requests should be posted at the University with the directions that the applicant consult the state secretary at association headquarters for information and advice.

* * *

The Council instructed Secretary Meyerding to write senators and representatives requesting their approval for a reasonable appropriation to maintain the Army Medical Library at Washington, D. C., and its Index Catalogue. Both are regarded as vitally important to the medical profession of the United States.

* * *

Appointment of Dr. O. E. Locken, Crookston, to the Board of Certification of Public Health Nurses was approved.

Industrial Medical Conference

ONE of the most significant features scheduled for the 84th Annual Meeting of the Minnesota State Medical Association at the St. Paul Auditorium next May 3, 4 and 5 is the Industrial Medical Conference.

This conference will begin with a dinner Tuesday evening, May 4, at which Voyta Wrabetz, Industrial Commissioner of Wisconsin, will speak.

All sessions Wednesday will be devoted to industrial surgery, industrial injuries and medical hazards of industry.

A group of famous surgeons and medical men whose experience in this increasingly important phase of medicine is outstanding will be there. Among them are: Michael L. Mason, Chicago; J. M. Wheeler, New York; and Maxwell J. Lick, Erie, Pa.

This conference has a special significance because it is arranged and sponsored by Organized Medicine. Similar conferences have been held by insurance companies. They were valuable conferences but they gave rise to conjectures on the part of thoughtful observers concerning the very real possibility that industrial medicine might someday slip from the control of the medical profession and separate itself from legitimate medical teaching in the schools.

The May conference in St. Paul is the answer to such conjectures in Minnesota.

Medical Survey

A SURVEY of the costs of medical practice, in general, including medical education, postgraduate work, attendance at meetings and postgraduate courses, office overhead, expert assistance and transportation has been approved by the Council for Minnesota.

After considerable discussion on the part of a preliminary committee to study the matter and an inquiry into possible sources of funds and assistance for such a survey, the Council determined at length to confine the study, initially, to information that can be obtained by and through members of the association.

Members in all parts of the state are to be asked to volunteer their services over a period of a year to compile actual figures on the costs of medical practice.

No Figures

Such figures have never been secured or compiled before in all the mass of accumulated data of all kinds on medical care.

They will serve to show legislators, county officials and others who may in the future be concerned with the determination of fees for medical care just exactly how much it costs the doctor to care for his patients. That means, of course, his indigent as well as his paying patients.

Committee

The preliminary committee which reported to the Council included President-Elect A. W. Adson, President W. W. Will and Secretary E. A. Meyerding. The permanent committee to conduct the survey as it was tentatively shaped at this meeting will include the preliminary committee members and Dr. T. H. Sweetser, Minneapolis; Dr. George Earl, St. Paul; Dr. H. S. Diehl, Dean of the Medical School; and Mr. R. R. Rosell, assistant to the secretary, the latter two being ex-officio members.

Group Hospitalization

GROUP hospitalization is on the march, says Dr. Charles B. Reed of Chicago, in a recent issue of the *Illinois State Medical Journal*.

Some of Dr. Reed's observations are printed here because group hospitalization is one outgrowth of the insurance scheme for providing for life's uncertainties that is of extreme importance to physicians.

"Zealous advocates of the idea have created and spread the erroneous impression that medical men are opposed to all plans for Group Hospitalization," says Dr. Reed. "The truth is that no serious objections have been made by physicians to properly organized groups which have such medical representation in the management as to assure the expulsion of features hostile to the welfare of the people and to the proper practice of medicine. Indeed, the groups which have achieved the most success are those that have this cooperation . . .

Chicago Report

"In order to meet intelligently the exigencies of the local situation a committee was appointed by the Chicago Medical Society last spring to study the question. In June a report was presented to the Council which embodied certain principles which the Committee felt might preserve the ethics of practice and the independence of the doctor under the conditions imposed by the experiment.

"These principles were fundamental in character and required the proponents of Group Hospitalization so to organize as to—

1. Preclude the possibility of hospitals practicing medicine and from exploiting the services of physicians.
2. Prevent the underbidding of hospitals.

3. Recognize the A. M. A. and A. C. S. standards as the basis for hospital membership with such modifications as the Chicago Medical Society (or the county society) may from time to time officially approve.

4. Exclude no hospital except for reasons set forth in clause three.

5. Refer all matters of medical administration and medical policy to the Chicago Medical Society (or county society), whose decision in such cases shall be final and binding both on the Group Hospital management and on the member hospitals.

6. Keep such records of admission and assignment of patients as the medical society of the county may require and to keep them open for inspection by properly appointed officials of that body.

"The Committee believes that these principles should control the relationship between the medical profession and the Hospital Groups.

"Furthermore, in every instance where the plan is legitimately organized on a 'not for profit,' and therefore presumably on a wholly altruistic basis, reasonable protection should be assured against diversion of funds to sales agencies, publicity men, or profit seeking corporations. The enterprise should concern itself solely with hospital care to avoid entanglement in contract practice. Logically also, the control should be vested in the people who can render the service, that is, the doctors and the hospitals.

"With single hospitals, or small communities, the project may succeed but if wider and more ambitious expansion is undertaken the plan should embrace all approved hospitals, and their staffs should be open to all approved medical men, for otherwise a rift would be created and the hospital field opened to competition by rival groups, bidding and underbidding for 'acquisitions' or in membership drives which ultimately would bring ruin to the hospitals as well as the competing groups.

"The situation is problematical, the experiment unproven as yet and, in spite of the principles laid down, some cases admit so great a possibility of commercial domination that not only the plan but details of its operation should be most carefully studied before receiving a professional endorsement.

"In fact, medical men should refuse official recognition of such insufficiently tested schemes, until all the principles laid down have been complied with and the county society has so authoritative a voice in the management that it may watch sedulously the development and tendencies of the protean forms which this movement may assume."

What Dr. Leland Says

Dr. R. G. Leland, director of the Bureau of Medical Economics, American Medical Association, has also made an interesting study of hospital insurance.

"The importance of the movement," says Dr. Leland,

"has been sensationally overstated. Out of 144 organizations which were, at one time or another, in the course of formation, only twenty-three exist today."

According to Dr. Leland, unmethodical management is commonly present and no adequate records are kept on which actuarial conclusions can be based. Attempts at financial statement are characteristically feeble and unbusinesslike.

Where they do not fail and disappear, the trend of these enterprises is, inevitably, toward the setting up of a surreptitious insurance business which makes for commercial expansion, competition, increase of commercial influence, merger with legitimate insurance concerns or finally become nuclei for expansion into health insurance or state medicine.

"The nature of the contract, therefore, and the type of administrative control are extremely important to the medical profession," according to the Leland report. "Medical men should vigorously oppose any proposition which destroys the basic features of medical service or permits hospitals, even by indirection, to enter the practice of medicine."

Preaching or Practicing

(Monthly Editorial by the Medico-Legal Advisory Committee)

William Corbin writes recently in *The American Magazine* using the title, "What We Pay for the Crash Racket," from which we quote for your consideration:

"Recently when I moved to New York I found to my amazement that it cost nearly \$300 a year in premiums to get liability, property damage, collision, and fire and theft insurance on my new \$600 car. I growled loudly to friends and neighbors and found plenty of sympathizers. But nobody could explain why rates were so high. Some blamed the Government, some the insurance companies. Some both."

And his conclusions:

"For the present, there is no hope for a general reduction in rates. Rather, there may be an increase. Two-thirds of every premium dollar I pay for public liability insurance is paid back in claims to the motorists. The only way our automobile insurance rates can be reduced is through preaching and practicing safety, and aiding the agencies which devote themselves to the exposure of fraud."

Mr. Corbin strikes a corresponding chord in our own situation.

Analyze The Cause

Your Medico-Legal Committee can continue to preach about the situation in our state, the members can continue to blame the insurance companies for raising rates for liability insurance, but

unless each one of us gives due consideration to the thoughtful analysis of the reason for this disturbing element in medical practice and the exercise of careful, safe driving through the pitfalls of medical work, just so long will this nefarious racket of the malpractice case operate to the detriment of the medical profession and their clientele.

We can save money from premiums by consideration of and careful suggestions to each other. Many a cautious word spoken by a guarded tongue has stilled a potential lawsuit and preserved an able reputation. Constructive criticism should always be welcomed, not condemned.

Certainly he belittles himself who heedlessly censures others and thus unthinkingly raises his own costs as well as the insurance rates for all.

Medical Economics Committee

PROBLEMS of several committees were discussed informally by members of the Medical Economics Committee, meeting recently in St. Paul.

Prominent among them were several questions referred to Organized Medicine by the State Board of Health through Dr. T. H. Sweetser, chairman of the State Health Relations Committee.

What shall be done with the Venereal Disease Camp now in operation at Savage, Minnesota? Federal funds are no longer available to support the camp.

Camp For Transients

It has been proposed that the State Board of Health set aside funds out of its appropriations to maintain the camp for transients and homeless men as a measure of protection for the community.

The Board, after an investigation, appropriated a small sum to maintain the camp for a three months' period, during which time definite decision will be made as to the usefulness of the camp.

Members of the committee and guests from other committees went on record as favoring, emphatically, the utilization of agencies and facilities already functioning for the general population for treatment and isolation of these transient men. Only a very small proportion of the men now at the camp were found to be infective and the money required to maintain them in

camp was regarded as exorbitant for the trifling protection afforded, especially since it is impossible to keep men strictly quarantined in the camps.

Pneumonia Control

The problem of pneumonia control—also of great interest to Surgeon General Parran—is now under discussion by the Board. An appropriation of \$10,000 for pneumonia sera is under contemplation. The Board would do the typing for indigent cases of pneumonia and would provide serum. It would coöperate with any medical societies that cared to work with it to spread use of these sera for the types of lobar pneumonia for which it is regarded as effective and also to test the efficacy of rapid typing.

The suggestion was made that groups of physicians in different parts of the state might undertake to assist the Board in a campaign to increase the use of serum treatment for pneumonia. The committee went on record as recommending that the entire matter be turned over to the Committee on Public Health Education for further study and recommendations to the Council.

For More Immunization

Dr. L. R. Critchfield, chairman of the Committee on Public Health Education, offered speakers and other assistance to any county medical societies who may wish to promote a campaign for diphtheria immunization in their communities or vaccination for smallpox. It was pointed out, again, that immunization materials and vaccine are now available from the State Board of Health for such projects and that a special effort to immunize children is essential, not only to the public welfare, but to avoidance of unnecessary hiring of physicians to provide preventive care for school children.

The plan for physical examinations of all members now being perfected by officials of the American Legion was discussed. Unofficial information as to the scope of the examination asked for and as to the fees set elsewhere in the United States roused some question in the minds of the committeemen present. It was suggested that the tentative plans of the Legion be brought to the attention of county secretaries immediately so that they may be in a position to object in many Legion posts if plans call for extensive laboratory examinations and a fee too small to cover costs for an adequate investigation.

A detailed explanation of what is required for

a complete physical examination and what should be a fair fee for such service is to be given, at the direction of the Council at a recent meeting, to Legion officials who are now drawing up the plan.

Joint Finance and Collection Agencies Opposed

Several important policies were recently established for Wisconsin physicians by the House of Delegates of the Wisconsin State Medical Society.

One, relating to participation of physicians in joint finance collection schemes, was subjected to considerable discussion. It was formally adopted, however, with but three dissenting votes.

As a result, any member of the Wisconsin State Medical Society who participates in any scheme in which the business of adjusting accounts and making loans is combined with the business of collections shall be declared to be guilty of unethical and unprofessional conduct and such conduct is declared to be good and sufficient cause for revocation of membership in the society.

Loss to Doctors, Patients

The Banking Commissioner of Wisconsin pointed out the impropriety of combining collections with finance and loan companies. His opinion was cited in the resolution passed by the physicians with the additional note that if physicians generally, or any of them, participate in such schemes the inevitable result will be loss of public respect, loss of the physician-patient mutual relationship, a commercializing of the profession, in that the physician becomes party to a contract in which his patients are induced to use high interest rate procedures to finance cost of medical care, and an increase in costs to the patient.

Society Must Approve

Another significant resolution demands that all members who contemplate participation in plans for medical service which do not provide for unrestricted free selection of physician by the patient, himself, shall submit the terms to their component county medical societies before entering into them. If the county medical society disapproves of the plan then the mem-

ber must decline to participate in it or show cause why he should not be dropped from membership.

The delegates also approved the appointment of a special committee on the subject of credits and collections with representation thereon from each councilor district; adopted a resolution urging legislation requiring that applicants for license to practice medicine be either citizens of the United States or that they be licensed to practice in the countries in which they completed their medical education; reaffirmed its position that questions on hospital practice as they relate to pathology and radiology be handled through the grievance committee of the component county medical society; endorsed legislation looking toward examination of applicants for driver's license.

Minnesota State Board of Medical Examiners

Two Quacks Plead Guilty at New Ulm, Minnesota

Re: State of Minnesota vs. Peter Heppner

Re: State of Minnesota vs. Rudolph H. Bock

On November 3, 1936, Peter Heppner, fifty-two years of age, who lives on a farm near Butterfield, Minnesota, and Rudolph H. Bock, thirty-three years of age, who lives at Essig, Minnesota, entered pleas of guilty at New Ulm, to an information charging them with practicing healing without a basic science certificate. Heppner, who has a previous conviction (October 15, 1936) at Fairmont, Minnesota for a similar offense, was sentenced by the Honorable A. B. Gislason, Judge of the District Court, to a term of twelve months in the Brown County Jail. Judge Gislason told Heppner that he had to serve three months of this sentence, at the end of which time he would be released, and the balance of nine months would be suspended upon the condition that he absolutely refrain from practicing healing in any way, shape or manner in the state of Minnesota. Bock was given a sentence of three months in the Brown County Jail, but this sentence was suspended by Judge Gislason due to the fact that it was Bock's first offense, and because of his stating to the Court that he was through entirely with this type of thing. Bock was further required by the Court to likewise refrain from practicing healing in any manner in the State of Minnesota. Heppner was ordered to report to the Court on the opening day of the May, 1937, term after he has served his jail sentence, and Bock was ordered to report to the Court at the opening day of the November, 1937, term of Court. Bock was also required to pay the court costs of \$14.50.

Heppner, prior to October, 1935, had represented himself in southwestern Minnesota as a nerve and bone setter. Following his appearance in court at Fairmont in October, 1935, before Judge Haycraft, he worked on a farm until June, 1936. At that time

he treated a number of individuals in the vicinity of Winthrop, Minnesota. In the latter part of October, 1936, he teamed up with Bock for the purpose of examining patients who had purchased tablets sold by Bock. Bock told the court that these tablets were purchased from the Munsell's Mineral Products Company, Nebraska, and that they were being sold at the rate of \$7.50 per 1,300 tablets. They were represented as a cure-all for any number of ailments from colds and sinus trouble to pulmonary tuberculosis. A number of individuals had purchased as much as sixty to seventy dollars worth of these tablets. Bock told the court that his profit was \$2.50 per 1,300 tablets. The facts indicate that some patients had bought between ten and twelve thousand tablets and were still taking them.

This tie-up between Heppner and Bock was stopped at the outset between the prompt and efficient work of Eugene Clark, Chief of Police at Sleepy Eye, Minnesota, and Sheriff John Reitter of Brown County. The Medical Board also wishes to acknowledge the fine co-operation received from Mr. T. O. Streissguth, county attorney at New Ulm.

Minnesota Physicians Lose Licenses

In the Matter of the Revocation of the License of Val Do Turner, M.D.

At the regular meeting of the Minnesota State Board of Medical Examiners held on November 7, 1936, the license to practice medicine held by Dr. Val Do Turner, St. Paul Negro physician, was revoked, cancelled and set aside. Dr. Turner was arrested on August 7, 1936, following the issuance of a complaint charging him and one George R. Viger with the crime of manslaughter in the first degree. The complaint was filed following the death of a twenty-seven-year-old St. Paul woman at Ancker Hospital on July 15, 1936, after the performance of a criminal abortion upon her by the defendant Viger. Viger is serving four years in the State Prison at Stillwater for his part in this crime. The investigation disclosed that the woman went to the office of Dr. Turner and was referred by Dr. Turner to the defendant Viger.

Dr. Turner was previously before the Medical Board on July 8, 1936, in connection with the performance of a criminal abortion on another woman, and was given another chance to make good by the Board. On September 23, 1936, following the surrender by Dr. Turner of his medical license and his basic science certificate, the manslaughter charge against him was filed away. Dr. Turner, who is seventy years of age, is leaving to reside with his sisters, one of whom lives in Detroit, Michigan, and the other one in Nashville, Tennessee.

In the Matter of the Revocation of the License of Frederic H. Moss, M.D.

On November 7, 1936, the Minnesota State Board of Medical Examiners revoked the license to practice medicine formerly held by Dr. Frederic H. Moss. Dr. Moss' license was revoked because of his habitual indulgence in the use of narcotics. Dr. Moss is thirty-nine years of age and a graduate of the University of Minnesota in 1927. Dr. Moss formerly practiced in Minneapolis, Zumbrota, Grand Rapids, and a number of other Minnesota towns, the last one being New Richland. The records of the Medical Board show that Dr. Moss has used morphine at various times over a period of approximately eight years. Dr. Moss was first cited to appear before the Board in February, 1935.

In the Matter of the Revocation of the License of William M. Chowning, M.D.

William M. Chowning, sixty-three years of age, and licensed to practice medicine in the state of Minnesota on April 12, 1901, had his license revoked by the Minnesota State Board of Medical Examiners on November 7, 1936. Dr. Chowning, who has practiced in Minneapolis for many years, was convicted in the District Court of Hennepin County on April 24, 1936, of the crime of abortion. The grand jury of Hennepin County indicted Dr. Chowning on October 30, 1934, along with another defendant, one Val Ramer, a woman who holds no license to practice any form of healing in the state of Minnesota. Following Dr. Chowning's conviction he was sentenced by Judge E. A. Montgomery to a term of not to exceed four years in the State Prison at Stillwater. The sentence, however, was suspended by the court.

Indian Quack Pleads Guilty at Mankato

Re: State of Minnesota vs. Henry Jeffrey, alias "Doctor" Jeffrey

On November 24, 1936, Henry Jeffrey, alias "Doctor" Jeffrey, who claims to be seventy-seven years of age, and who resides at Armstrong, Iowa, entered pleas of guilty to two complaints charging him with practicing healing without a basic science certificate, before the Honorable L. H. Morse, Judge of the Municipal Court at Mankato, Minnesota. Judge Morse fined Jeffrey \$100.00 or forty-five days in the Blue Earth County jail on the first complaint, and upon payment of the fine Jeffrey was given a suspended sentence of ninety days in the Blue Earth County jail on the second complaint.

Jeffrey is to absolutely refrain from practicing healing in the State of Minnesota, and is to remain out of the State for a period of one year.

Jeffrey, who represented himself in Mankato as "Doctor" Jeffrey, and who claims to be one-half Cherokee Indian, has been making frequent trips to Mankato during the past six months. In September he undertook to treat a Mankato woman who was suffering from tuberculosis. Jeffrey diagnosed her case as "asthma" and prescribed several kinds of roots and herbs. For this he was paid the sum of \$15.00. Jeffrey's first call to this patient was September 14. He made a second call on September 28, and the patient died on October 11. Jeffrey was also treating a second woman at Mankato for what he described as a blood condition. At the time of his arrest Jeffrey had the back of his automobile filled with boxes and packages of roots and herbs, empty bottles, pill and salve boxes, with duplicate sheets containing directions for the various preparations. Jeffrey's customary charge was \$15.00 at the time of his first call and \$10.00 per month thereafter.

The State Board of Medical Examiners received very splendid cooperation in the handling of this case from Mr. C. A. Johnson, County Attorney of Blue Earth County; Mr. F. W. Cords, Sheriff; and Mr. Ben Williams, Deputy Sheriff. Because of the fact that Armstrong, Iowa, is just ten miles below the Minnesota state line, the Medical Board respectfully requests that it be immediately informed if Jeffrey attempts again to operate in the State of Minnesota.

South Dakota Woman Pleads Guilty at Worthington

Re: State of Minnesota vs. Hilda Andrews

Hilda Andrews, thirty years of age, entered a plea of guilty on December 19, 1936, to an information charging her with practicing healing without a basic science certificate. Following a statement of the facts to the Court, the defendant was sentenced by the Honorable Charles

A. Flinn, Judge of the District Court, at Worthington, to a term of sixty days in the Nobles County jail. Upon being informed that the defendant had closed her place of business on the day of her arrest in November and had returned to her home in South Dakota, Judge Flinn suspended the sentence and placed the defendant on probation, conditioned that she refrain from practicing healing in any manner in the State of Minnesota unless properly licensed. Judge Flinn also criticized the defendant for her failure to make proper inquiry as to the laws of this state before she opened her place of business at Worthington. It developed that Miss Andrews had taught school for the past eight years and had a B.A. degree. Judge Flinn told her that that was all the more reason why she should have made inquiry. The Court also pointed out that the Medical Laws in this state are enacted for the benefit of the people and to protect them from being imposed upon by quacks.

Miss Andrews advertised herself to the public as using the Brooking Methods of Ectyloctic Ablution, and also offered to give Oil Vapor Treatments and Swedish Massage. The treatments were advertised as a relief for rheumatism, neuritis, arthritis, lumbago, hay fever, eczema, nervousness, fatigue and many other human ailments. The charge was \$2.00 per treatment. Miss Andrews stated that she bought her equipment from a so-called Dr. Brooking at Sioux City, Iowa. She stated that she was to pay \$300.00 for a cabinet bath plus \$5.00 per gallon for the oil that was used in the Oil Vapor Treatments. She stated that she had paid approximately \$200.00 on her equipment and still owed about \$100.00. She also stated that she had been informed by Brooking that it was lawful for her to operate in the State of Minnesota. However, when she notified Brooking by long distance telephone that she was under arrest at Worthington, he stated that he would be unable to help her.

The State Board of Medical Examiners wishes to acknowledge the very fine coöperation that was received from Mr. Arnold W. Brecht, County Attorney of Nobles County. This case was one of the first matters to come before Judge Flinn, who was recently appointed to the Bench following the death of Judge Gurley, and we believe that the Court's criticism of the defendant for failure to make sufficient inquiry as to the laws of this State before starting in business, was right to the point. There is not much excuse for a person to engage in the unlawful practice of healing when a little inquiry would make it possible for the defendant, or anyone else, to ascertain the law in reference thereto. We also believe that the Court's observation that these laws are passed for the benefit and protection of the people, is a very timely one.

Hopkins Woman Pleads Guilty to Manslaughter

Re: State of Minnesota vs. Ethel Planque, also known as Ethel Benson.

On Monday, December 21, 1936, Ethel Planque, also known as Ethel Benson, fifty-two years of age, was sentenced by the Honorable Frank E. Reed, Judge of the District Court of Hennepin County, to a term of one to fifteen years in the State Reformatory for Women at Shakopee, Minnesota. Mrs. Planque was indicted by the grand jury of Hennepin County on December 9, 1936, charged with manslaughter in the first degree, and on December 19, 1936, she was permitted to plead guilty to manslaughter in the second degree.

The indictment against Mrs. Planque was returned following the death of a nineteen year old Northeast Minneapolis girl who was aborted by the defendant in the home of the defendant at Hopkins, Minnesota, on December 4, 1936. The operation was so crudely performed that it resulted in a perforation of the uterus

and the death of the patient on December 8, 1936, at the Minneapolis General Hospital. Mrs. Planque was to have been paid the sum of \$35.00 for the abortion, but actually received \$17.00 in cash. She admitted that she had no medical training of any kind, nor had she ever received any training as a nurse. Despite this lack of knowledge she admitted that she had performed a number of abortions.

The prompt handling of this case by everyone concerned is to be highly commended. It has been a rather difficult problem in the past to dispose promptly of similar cases, and the delay naturally greatly enhances the chances of the defendant to avoid punishment. The sentence imposed by Judge Reed should also tend to discourage this type of work.

**Remember, only the
Christmas Seals
you pay for
FIGHT TUBERCULOSIS
Have you paid?**

Kellogg's All Bran Omitted from The List of Accepted Foods

Submitted advertising for Kellogg's All Bran (J.A.M.A., Feb. 9, 1935, p. 474) has repeatedly been found to be in conflict with the spirit and intent of the General Decisions on Food and Food Advertising of the Council on Foods. The total effect of the firm's advertising is to impress the reader that Kellogg's All Bran is the answer to substantially all constipation difficulties. The reference to symptoms that may accompany constipation, together with the implication that Kellogg's All Bran will correct these conditions, is contrary to the Rules of the Council. The Council voted, in view of the continued objectionable advertising for products of the Kellogg Company and the claims made, that acceptance of the products of this company be withdrawn and that the products be reconsidered without prejudice if presented not earlier than one year from date of notification, to determine whether or not the policy of the firm has changed sufficiently to warrant reacceptance of the products at that time. The Council has recently summarized the available evidence regarding the significance of bran in the diet. Bran is a product which is capable of contributing to the nutritive requirements in a number of respects, notably as a source of roughage. There are individuals, however, who cannot tolerate bran. The Council believes advertising which conceals the potential danger of the indiscriminate use of bran is contrary to the best interests of the public. The Council therefore has reaffirmed its stand and authorized publication of its report. (J.A.M.A., Oct. 17, 1936, p. 1303.)

OF GENERAL INTEREST

Dr. C. A. Williams of Pipestone was recently appointed physician at the Pipestone Indian School.

* * *

Dr. Merchislaw M. Sarnecki of Saint Paul was united in marriage, September 6, to Miss Margaret Fahnestock of Lincoln, Nebraska.

* * *

Dr. H. E. Koop of Cold Spring, Minnesota, lost all his office equipment in a fire which swept through the main street of the town, December 14.

* * *

Dr. Ralph Knight, of Minneapolis, is devoting a year to the study of anesthesia at the Mayo Clinic. He expects to return to Minneapolis next July.

* * *

Dr. Thomas J. Kinsella announces the opening of offices at 1251 Medical Arts Building, Minneapolis. His practice will be limited to thoracic and abdominal surgery and tuberculosis.

* * *

Dr. William T. Peyton, associate professor at the University of Minnesota, was elected to membership in the Western Surgical Association at the annual meeting of the Association held at Kansas City in December.

* * *

Dr. Adolph M. Hanson of Faribault has become an associate in research of the Philadelphia Institute of Medical Research. Dr. Hanson will continue to carry on his research activities in his own laboratory in Faribault.

* * *

Dr. Morris H. Nathanson, formerly of Minneapolis, has announced the opening of an office for the practice of internal medicine, at 323 Westlake Professional Building, 2007 Wilshire Boulevard, Los Angeles, California.

* * *

Dr. Ruth E. Boynton, assistant to Dr. Harold Diehl before he became dean of medical sciences at the University of Minnesota, has been promoted to take Dr. Diehl's former place as director of the University of Minnesota Student Health Service.

* * *

Dr. L. C. Combacker of Fergus Falls was elected president of the Park Region Medical Society at the annual meeting in December. Other officers are Dr. C. J. T. Lund, Underwood, vice president; Dr. Norman

Baker, Fergus Falls, secretary, and Dr. T. S. Paulson, Fergus Falls, treasurer.

* * *

Dr. H. B. Dornblaser will take office as president of the staff at Asbury Hospital, Minneapolis, January 1, succeeding Dr. R. C. Webb, who was named to the board of directors. Other new staff officers are Dr. E. A. Loomis, vice president; Dr. W. H. Ford, secretary-treasurer; Dr. T. A. Peppard was named a director. Holdover directors are Dr. H. F. Wiese, Dr. B. A. Ginkgold and Dr. Lawrence Boies.

* * *

Dr. Joseph B. Gaida was recently married to Miss Naomi Mary Ann Aubin, daughter of Dr. and Mrs. Alexander Aubin, of Minneapolis, Minnesota. The bride, who was a high school teacher, is a graduate of the College of Education at the University of Minnesota. Dr. and Mrs. Gaida are at home in St. Cloud, where Dr. Gaida is an associate of Drs. J. J. Gelz, and W. T. Wenner, in the practice of eye, ear, nose and throat.

* * *

One of the most satisfying experiences one can possibly have must be the tribute paid by many friends on the rounding out of half a century of professional service to a community. Such was the experience on December 15, last, when some 200 admiring friends sat down to a banquet at Springfield, Minnesota, in honor of Dr. J. C. Rothenburg of that city, who has practiced medicine there for fifty years. The banquet tendered by the Springfield Booster Club and served by the Legion Auxiliary, was participated in by men and women of the community. Mr. A. G. Erickson, presiding as toastmaster, introduced the speakers, among whom were the Hon. Frank Clague of Redwood Falls, former congressman and judge, who was principal of Springfield's two-room school when Dr. Rothenburg arrived there October 1, 1887.

Mrs. A. C. Lehrer spoke for the women of the community and paid tribute to the doctor's sterling qualities and cheerful disposition. Dr. W. G. Nuessle spoke "As One Doctor to Another," praising the fine professional ethics which had always guided Dr. Rothenburg in his work. Following an address on the advances in modern medicine, by Dr. George B. Weiser of New Ulm, who was recently similarly honored, Mrs. Rothenburg came in for a share in the tribute when she responded to the toast "The Doctor's Wife" proposed by Mrs. Emma Mueller, a friend of Mrs. Rothenburg from childhood. Another interesting address was that given by Mr. Fred W. Johnson, president and founder of the Brown County Historical Association, who recited interesting data about the early Brown County physicians. Much community singing added to everyone's enjoyment of the gala occasion.

In Memoriam

John E. Campbell

1875-1936

DR. JOHN E. CAMPBELL was the son of the late Norman and Magdeline Campbell. He was born in Saint Paul on April 3, 1875. While he was still a small child the family moved to Minneapolis, where they lived until he had completed his education at the University of Minnesota, in 1901. The family home was on Clinton Avenue in Minneapolis. Besides Dr. Campbell the family consisted of one daughter, Miss Lulu Campbell, who died July 14, 1908, and another son, Theodore Campbell.

Dr. Campbell was graduated from a Minneapolis high school and then entered the University of Minnesota, from the medical college of which he was graduated in 1901 with degrees of Bachelor of Science, Master of Science, and Doctor of Medicine. He served one year as an interne in the Minneapolis General Hospital and in January of 1902 he came to South Saint Paul to practice, where he continued to practice until his death. He was married on September 18, 1903, to Miss Mary Jane Forsythe. Two daughters were born to them, Miss Mildred Campbell and Mrs. Frederick C. Grant of Saint Paul. He was very active in public and political affairs, having been Republican chairman for many years in Dakota County. In 1928 he was one of the Republican electors in the national election. Dr. Campbell traveled a great deal. During the summer of 1934 he traveled around the world, and every summer he visited countries in different parts of the world, always attending medical clinics in the great medical centers.

Next to the practice of medicine, Dr. Campbell lived for Minnesota football. The University lost its most ardent and sincere football fan in the death of Dr. Campbell. In his college days at Minnesota he became Minnesota's first cheer leader, and since that time had continued leading his own group's cheers. Since leaving school he had missed no home games and only one game away from home. Only three days before his tragic death he was actively leading the cheers of the "Hook 'Em Cow" football fans from South Saint Paul at Madison, Wisconsin, the group that he headed for all the thirty-five years he had been in South Saint Paul. It was through Dr. Campbell's efforts that this group became such staunch supporters of the Minnesota teams and traveled in a body to all the games. He always carried his famous megaphone and cane with Minnesota's colors on them, which he had had since he was in school.

There are many old time families in and around South Saint Paul and Dakota County that Dr. Campbell has taken care of, medically, for years. These people will sorely miss their loyal servant, who was always willing to give them medical aid at any hour of the

day or night. He was coming from one of these country calls on November 24, a very stormy night, when his car was swerved by the strong wind, skidded over the bank and caused the doctor's death.

He was a Scottish Rite Shriner and a member of Mizpah Lodge, No. 191, of the Masonic Order. He also held a membership in the Dakota County Medical Society, Ramsey County Medical Society, Minnesota State Medical Association, and the Military Surgeons. Dr. Campbell was school physician for many years and served as city and county physician for many terms in South Saint Paul.

John B. Darling

1859-1936

DR. JOHN B. DARLING, for more than fifty years a practicing physician in Saint Paul, died at his Summer home at Danbury, Wisconsin, November 10, 1936, at the age of seventy-seven.

Born at Fond du Lac, Wisconsin, he obtained his medical degree at Rush Medical College and studied for a time in Vienna.

Dr. Darling began practice in St. Paul in 1885—a period he used to refer as "the horse and buggy days, when we asked \$1.50 for a call and sometimes got it."

In 1898 Dr. Darling served at Fort Snelling as a contract surgeon where most of his practice was caring for typhoid patients among the troops, he having had as many as 203 typhoid cases at one time. He was always proud of the fact that he lost but three patients at that time from typhoid.

The same year he accompanied the troops to Leech Lake to put down the Chippewa uprising under Chief Bagwunagijik and attended the succeeding peace conference.

A little later Dr. Darling went to the Philippines with the Third United States Infantry, returning to St. Paul, where he continued his practice. His records during the fifty years of practice in Saint Paul included 1,967 obstetric cases. No patient was so poor but what he received needed attention at his hands.

Dr. Darling is survived by his widow, a daughter, Mrs. Gordon L. Fulmer, and a son, John B. Darling, Jr., all of St. Paul.

P. M. Fischer

1879-1936

DR. P. M. FISCHER of Shakopee, Minnesota, died September 29, 1936, of coronary disease, at the age of fifty-six.

Dr. Fischer was born on December 20, 1879, at Formosa, Ontario. He received his bachelor's degree from St. Jerome's College and his medical degree from Detroit College of Medicine in 1907. He took his internship at Harper Hospital, Detroit, Michigan, following his graduation.

Dr. Fischer spent his entire professional life in Shakopee, where he practiced and operated the Shakopee Hospital for many years. He was a charter member of the Scott-Carver County Medical Society and a

member of the Minnesota State and American Medical associations. He acted as county physician for several years. A Catholic by faith, he was an active member of the Knights of Columbus.

Dr. Fischer spent his last days in the construction of a new home. He is survived by his widow; a son, Elander; two daughters, Kathryn and Georgia Rose, and a brother, Dr. H. P. Fischer, all of Shakopee, and three sisters.

Willard Parker Greene

1871-1936

DR. WILLARD P. GREENE, Minneapolis, for many years senior epidemiologist with the Division of Preventable Diseases of the Minnesota Department of Health, died November 29, 1936, the day following a fall. He was starting on a field trip and had two large packages and a brief case in his hands as he left his office. He tripped at the top of the stairs and fell to the bottom, sustaining a skull fracture.

Dr. Greene was born October 7, 1871, at Hemlock, New York, the son of Dr. Jay Levins Greene, who was at the Bellevue Hospital, New York, during the Civil War. The father took up country practice in Hemlock and named his son after his favorite professor, Dr. Willard Parker. The father died when his son was but thirteen years old but the association between father and son up to that time stimulated the son to study medicine.

After attending the public schools at Hemlock, Dr. Greene attended preparatory school at the New York Seminary in Lima, New York, and graduated from the Genesee State Normal School in 1895. For the next five years he taught in grade schools at Caneadea, N. Y., and Flowersville, N. Y., and prepared special students for college. He graduated from the University of Michigan Medical School at Ann Arbor in 1904.

From 1904 until 1911 Dr. Greene practiced at Washington, D. C., and then joined the Indian Service at White Earth, Minnesota, where he practiced from 1911 to 1913. He became affiliated with the Minnesota State Board of Health, June 1, 1913, and served continuously with the Board except for the period from December 1, 1921, to April 26, 1926, when he was with the Veterans Bureau. The efficient way in which he reported on a typhoid epidemic on the White Earth Reservation when he was chief surgeon for the Indian Office led to his joining the State Board of Health.

Dr. A. J. Chesley, Executive Officer of the State Board of Health, pays the following tribute to Dr. Greene:

"He was about the best diagnostician on polio, meningitis, encephalitis I ever knew, as he saw nearly all the cases and suspects in Minnesota through all these years of service as Senior Epidemiologist. He never spared himself. Sleep, meals, fatigue, tough cases never cut in on his schedule to get work done. He was always a gentleman, courteous, kind and considerate, yet immovable in a matter of right and wrong. Never hurried, never excited, he was never too tired to start out at

unholy hours for long hard trips regardless of roads and weather. In the pre-auto days he many times was out two to three weeks at a stretch, getting whatever sleep he could in a livery rig between stops. He never asked a day off, and went without vacation year after year, filling in for others when they were sick or had sickness in their families.

"As a friend, Willard P. Greene was true and dependable. The Chippewas held him in such esteem that a number of times delegations have come from the North to Minneapolis and sometimes waited two or three days for him to return from some epidemiological trip to ask his advice on personal or tribal matters. What an Indian would not do for him, the most intelligent and well trained loyal collie dog would not do for his master. It was uncanny the way he got people to do right when others who tried failed completely. Behind his soft, slow speech always politely put, he had a will that never weakened and the toughest fellows one ever meets in field work never got the best of Dr. Greene. You realize what his death means to the old-timers on the staff who have worked with him since June 1, 1913."

Dr. Greene is survived by his widow, Harriet Cranston Greene, a daughter, Lois, and a sister, Mrs. David J. Gibson of Rochester, N. Y.

Giles R. Pease

1857-1936

Word has been received of the death of Dr. Giles R. Pease at Los Angeles, California, on May 28, 1936. Dr. Pease practiced medicine for forty years in Redwood Falls, and moved to Los Angeles upon his retirement, seventeen years ago. He was seventy-eight years of age at the time of his death.

Gadoment Not Acceptable for N. N. R.

The Council on Pharmacy and Chemistry reports that Gadoment is the coined, proprietary name under which E. L. Patch & Co. markets a preparation stated to contain "70 per cent Cod Liver Oil in a wax base with Zinc Oxide Benzoin and Phenol." According to a trade package it is proposed for use in the treatment of burns, cuts and minor skin irritations. Early in 1935, E. L. Patch & Co. inquired of the Council's Secretary what would be the attitude of the Council on the use of the trade-marked name "Gadoment." After some further correspondence with the firm the Council held that the firm's right to the use of a proprietary name for this product was not established. From its consideration of the evidence from the literature, the Council concluded that the whole subject of cod liver oil treatment of burns and wounds is still in an experimental stage. E. L. Patch & Co. has in the case of Gadoment gone precisely contrary to the accepted way of introducing a new preparation. Instead of collecting evidence for claims and then presenting this to the Council, the firm went ahead promoting the product with the unconfirmed claims. The Council declared Gadoment unacceptable for New and Non-official Remedies because it is an unoriginal product of insufficiently declared composition marketed under a coined proprietary name with unwarranted therapeutic claims, and indirectly advertised to the public. (J.A. M.A., Oct. 24, 1936, p. 1384.)

MINNESOTA STATE MEDICAL ASSOCIATION

House of Delegates—Special Session

November 1, 1936

THE HOUSE of Delegates of the Minnesota State Medical Association met in special session at the Saint Paul Hotel, Sunday, November 1, formulated certain important general principles held by the medical profession of Minnesota to be essential to the delivery of good medical care.

The immediate objective: an official and definite recommendation embodying these principles for presentation, at the latter's request, to the Interim Committee of the Legislature. The Interim Committee is now engaged in the final effort to draw up workable legislation coordinating welfare work in Minnesota for submission to the 1937 session of the Legislature.

The special session, prefaced by a Council meeting, convened at the Saint Paul Hotel at 10:30 a.m. Sunday.

Dr. O. E. Locken, Crookston, elected speaker of last May's House of Delegates meeting at Rochester, was retained by consent of the delegates to preside over the special session. Thirty-two delegates were present together with officers, committee chairmen, other interested members, also Dean H. S. Diehl of the University of Minnesota Medical School and representatives of the dental and pharmaceutical associations. Among the latter were Dr. L. M. Cruttenden, St. Paul, secretary of the Dental Association, Dr. D. W. Wilson, Belle Plaine, chairman of the Dental Association's legislative committee and president-elect, and Dr. V. D. Irwin, Dental Association member, and Mr. W. C. Kregel, St. Paul, chairman of the legislative committee of the State Pharmaceutical Association and Mr. A. Roy Johnson, secretary, State Pharmaceutical Association.

A reference committee consisting of Dr. J. L. McLeod of Grand Rapids, chairman; Dr. L. L. Sogge, Windom; Dr. C. M. Johnson, Dawson; Dr. W. A. Coventry, Duluth; Dr. M. C. Piper, Rochester, and ex-officio members: Dr. T. H. Sweetser, Minneapolis, and Mr. F. Manley Brist, St. Paul, was appointed by the Speaker. The reference committee was instructed to meet at noon and draw up proposals based upon the discussion for final action by the delegates.

The morning was devoted to discussion of a series of pertinent questions put to the delegates in advance of the meeting by Dr. Sogge.

The questions, briefly, covered the right of relief recipients to select their own physicians and hospitals, participation of physicians in the administration of relief, authorization for medical care to relief patients, and method of payment—direct or indirect—of the physician for his work.

They were intended by Dr. Sogge and his committee simply as a starting point for consideration of the entire problem and prompted some interesting discussions of which only highlights are given here.

DR. GEORGE EARL (newly elected successor to the late Dr. H. M. Workman as chairman of the Council): The matter of the advisability of a uniform state fee bill for

relief work has been brought once more before the Council. It is the consensus of the Council, and, I believe, of others who have given the matter serious study during these last few years that a uniform fee bill drawn up by the state association is objectionable from many points of view and should not be considered.

DR. L. L. SOGGE: We feel that the problems before us today are so important and mean so much to the public welfare, as well as to the profession of medicine that we could not assume the responsibility, alone for the recommendations to be made to the Interim Committee. That is why we have asked for this meeting and I am very much pleased to see so many present for this discussion.

The committee, after discussions in which Dr. J. L. McLeod, state senator and member of the Interim Committee participated, feels that recipients of relief should have the right to select their own physicians for themselves and members of their families; also that this right, once established, would in most cases solve the difficulty of choice of hospital, which should, however be allowed in case of a question.

The superiority of the county system of handling relief in comparison with the township system was made a matter of record by the House of Delegates at its Rochester meeting in May. The Committee felt therefore, that no further action on this matter need be taken up at this meeting.

The committee felt that the medical advisory committee in each county played a valuable part in the administration of medical relief and should be continued. The question of whether or not a physician should be a member of the county welfare board, in the event that such machinery is established, received no action.

It was also the opinion of the committee that payments for professional services should be made to the physician direct in all cases of direct relief. In case of work relief the committee made no recommendation looking toward statutory enactment. It was the opinion of the members that the situation might be handled satisfactorily and with much less difficulty by administrative rule or regulation.

The form of authorization for treatment used under SERA was recommended by the committee as practical and satisfactory. But some qualification of the law was thought advisable by the committee so that the basis for eligibility to relief may be based upon the individual needs of the patient concerned rather than upon some arbitrary ruling.

Now these suggestions from the Committee on Public Policy and Legislation should not be received as a pre-prepared plan that must be accepted by this meeting. We ask you for your best thought and opinion and all of us, naturally, will be guided by your decisions today.

DR. O. E. LOCKEN (Speaker): The Interim Com-

mittee, as I understand it, received \$5,000 to make its investigation. It is obvious that so tremendous a field could not be thoroughly investigated with so small a fund. A special investigation is accordingly being made by a committee of the State Planning Board, also, which has an appropriation from the Federal government of \$25,000 for the purpose. This study will be exhaustive. Its findings will be available to the Interim Committee though its official report is to be made to the governor. On the committee are two members of our organization, Dr. W. A. Coventry of Duluth and myself, appointed by members of the planning board for the purpose of giving Organized Medicine a proper representation in the planning of the study.

DR. W. A. COVENTRY: The committee has had only two meetings but I feel certain that something will come out of its investigations that will be worthwhile. As the only representatives on the committee of the professions of dentistry, pharmacy or hospital executives, we shall assume the responsibility of looking after interests of all the groups allied to medicine.

DR. LOCKEN: It is generally recognized that there will always be a large number of unemployed regardless of whether the times are good or bad. Changes in industry plus the lengthening span of life and the tendency of industry to turn men out after the age of 50 are responsible. An approximate expenditure of at least \$60,000,000 a year is estimated as necessary to care for this large constant group. Our program of Social Security must inevitably be broadened to provide for these people as well as for other problems. Policies must be shaped to guide in drawing the line between those who can help themselves and those who will be wards of the state.

We are extremely fortunate in having several members of our association in the legislature, notably Dr. McLeod, who is a state senator and himself a member of the Interim Committee.

(For Dr. McLeod's talk see the December, 1936, issue, Medical Economics Section, pages 802-803.)

DR. B. J. BRANTON, Willmar: With Dr. McLeod on the Interim Committee, I am sure that we are going to be well represented.

We know we are living in a changing time, a time that is bringing new problems. But we also know that one thing should never be changed no matter what other adjustments the times may require: that is the one factor that has been fundamental since the beginning of medicine to good medical care—the confidential doctor-patient relationship.

DR. C. L. ROHOLT, Waverly: Two things especially should be thoroughly discussed and ironed out by the Committee and the Legislature.

One is this matter of emergencies. When an emergency is brought in the physician notifies the proper authorities. But the authorities, upon looking into the case, may decide that the patient was not technically a pauper and refuse payment and the physician is out altogether. It is as difficult to determine who is a pauper as to determine whether a man is drunk after three drinks.

Another thing is the question of hospitalizing patients in their home county hospitals. Ordinary cases can much better be hospitalized at home, I believe, with the county paying half and the state paying half, than by sending them to neighboring counties or to the University hospital.

MR. F. M. BRIST: The Department of Administration and Finance, commonly known as the "Big Three," Friday notified the State Board of Medical Examiners that no further vouchers issued by the Board would be honored. That leaves the Board at present in the position of not being able to pay out anything even for rent and overhead. Until Friday the State Board of Medical Examiners has always been self sustaining and has never been requested to prepare a legislative budget. The Big Three have now requested the Board to prepare a budget for submission to the Legislature. If such a budget is prepared the Big Three will have the power to alter, revise, lower or increase it, at will.

Since its creation, the Board has been financed chiefly by the registration fee of \$2.00 paid by licensed physicians each year. This money, amounting to about \$7,000, supplements the funds realized from the \$20 examination fee. The total is insufficient for the work and the suggestion has been made that the Legislature be asked to increase the license fee. If, as a result of the action of the Big Three, the medical board is not to be able to spend the money without an appropriation, you should think twice, it seems to me, before asking that the fee be raised. The whole matter has been put up to the attorney general for a ruling and the solution will depend upon his decision.

DR. A. W. ADSON, Rochester (President-Elect and member of the State Board of Medical Examiners): If the Board is to continue its present active program, additional funds will have to be secured. Our future course depends now upon the attorney general. If his decision is favorable and if the Big Three accepts it, in all probability the Board will ask the Committee on Public Policy and Legislation to ask the Legislature for an increase in the registration fee. If the decision is unfavorable no increase will be asked because the license fee will then become virtually a special tax on the medical profession.

I can assure you, however, that the State Board of Medical Examiners fully appreciates the problems that confront all of us and will do nothing rash. Members will find some satisfactory method, I feel sure, to carry on the important program of eliminating quacks, also irregular practice among licensed physicians.

DR. E. A. MEYERDING, St. Paul (Secretary): The \$3,000 appropriated in case it was needed by this House of Delegates to assist the Board was never called for. It has accordingly reverted back to our treasury and is not in our budget for that purpose at this time.

DR. THEODORE SWEETSER, Minneapolis (Chairman, Committee State Health Relations): I hope the reference committee will pay particular attention to the prevention of abuses. If there is anything that is going to break down a system such as we hope to propose, it is going to be abuses creeping in and the resentment that will be caused thereby. We ought to go

as far as possible to prevent this thing becoming a political machine.

DR. HORACE NEWHART, Minneapolis (Chairman, Committee on Deafness Prevention and Amelioration): I want to take this opportunity to bring before the House of Delegates a new problem that has grown out of the development of instruments for the accurate measuring of hearing. Such instruments have recently been put on the market at much reduced cost and laymen calling themselves "audiometrists" are likely to be going into the business of testing hearing. If these laymen are allowed to go unsupervised and uncontrolled, they will do a great deal of harm. Medical men must retain leadership and control, it seems to me, in matters like this. Proper hearing tests for every child are going to be demanded but physicians must control and direct these tests, and, if legislation is needed to keep this control, it should be seriously considered.

DR. LOCKEN: We should not overlook the fact that large Federal grants for aid to the blind will be available in Minnesota as soon as laws are passed to qualify under the act. We must be alert to developments in this field, also, in order to retain proper leadership and control in medical matters.

Adjournment for lunch.

Drs. V. D. Irwin, L. M. Cruttenden, D. W. Wilson, Minnesota State Dental Association, introduced; also Dr. H. S. Diehl, Dean of the Medical School, and Mr. Johnson, pharmacist.

DR. DIEHL: I can assure you, as representative of the medical school, that we are very sincerely interested in the problems you are considering here today. It is our responsibility to prepare students to take their place with you in the ranks of the practitioners. In so doing we must acquaint them with the social-economic conditions which they must face when they are out in practice.

It occurs to me that we may be able to assist you by participating in studies of certain aspects of the problems you are considering. We can help perhaps by collecting information and helping to analyze data. If so, I am sure the members of our faculty will be the most happy to contribute in any way possible.

Dr. R. G. Leland (Director of the Bureau of Medical Economics, American Medical Association): (For Dr. Leland's talk see the December 1936 issue, Medical Economics section, pages 803-804.)

DR. C. B. WRIGHT, Minneapolis: I came here hoping that Minnesota would be able to give to the country something constructive on the important problems involved in the care of the indigent. I have listened carefully to the discussions and I feel that I shall not be disappointed. We are really working sanely and conservatively and we shall be able to lay down a few general principles, at least, that will help not only the politicians but the public itself to form the best ways of caring for the people.

DR. LOCKEN: We are ready now for the report of the Reference Committee. The Reference Committee has based its recommendation upon the questions brought up in the letter sent to delegates to this house last week in preparation for this meeting.

DR. McLEOD (Chairman):

Question 1—Do you believe that the recipient of relief should have the right to select the physician who is to render medical and surgical treatment to him or members of his family?

Answer—We recommend that where medical aid is to be rendered to a recipient of relief in any form, the recipient or his guardian should have the right to choose his own physician.

Question 2—In the event hospitalization is necessary do you believe this right should extend to the selection of the hospital?

Answer—We recommend that where local private hospital facilities are available, adequate and practicable, the recipient of relief or his guardian should have the choice of institution.

Question 3—The House of Delegates at the last state meeting at Rochester expressed its opinion that the county system of the care of the indigent is preferable to the town system. If the legislature should create a county welfare board in each county do you believe that a physician and surgeon who is duly licensed to practice medicine in the state of Minnesota, and who is a member of the local, county or district medical society, should be a member of such county welfare board? (a) In what manner do you believe such physician should be selected? (b) Do you believe that a physician and surgeon who is a member of such a county welfare board should render professional services to the recipient of relief?

Answer—We suggest that this body should take no action on this matter. The first part is controversial, and it is not a question that the medical profession is going to be able to settle. It is doubtful whether the legislature will be able to settle it in this session. So far as a physician going on the board is concerned, we felt that that matter, also, was going to provide too many openings for argument at this time. Therefore, we suggest no action.

Question 4—Do you believe that the allowance for professional services should be paid to the recipient of relief or direct to the physician? (a) If the patient is on so-called direct relief? (b) If the patient is on so-called work relief?

Answer—We recommend that allowances for medical services for recipients of relief of any kind should be paid directly to the physician.

Question 5—What form of authorization, exclusive of emergency cases, do you believe to be the most satisfactory and practical, taking into consideration—(a) The needs of the patient; (b) The orderly administration of relief; (c) The assured payment of the bill.

Answer—We recommend that all forms of authorization for medical relief services shall continue as they are set up at the present time. In other words, the SERA authorization forms which were put into effect by the state some time ago at the request of Dr. Meyerding and this Association, should carry on.

Question 6—Are you opposed to the so-called practice of "bidding" in the rendering of professional services to the recipients of relief?

REVISED CONSTITUTION

Answer—We are opposed to the so-called practice bidding for rendering of medical services, and believe that we should adhere to the principle we established in the first article, the right of choice of physician.

Question 7—Do you believe that the furnishing of adequate medical and surgical attention to a recipient of relief is of sufficient importance, not only from an economic standpoint but from the point of view of the patient, the taxpayer and the state of Minnesota, to warrant a separate consideration of each case?

Answer—Yes.

Question 8—Do you believe that occasionally there are individuals in the community who are in need of medical relief, who are not on relief in so far as the other necessities of life are concerned?

Answer—Yes.

There was some discussion in which several members, notably Dr. Herman Linde, Cyrus; Dr. A. G. Chadbourn, Heron Lake; Dr. Nels Westby, Madison; Dr. T. F. Hammermeister, New Ulm; Dr. Chester Stewart, Minneapolis; Dr. W. W. Will, Bertha; Dr. V. F. Braasch, Rochester; Dr. W. A. Coventry, Duluth; and Dr. Monte Piper, Rochester, took part as to how far the indigent patient could safely be allowed his choice when, for instance, he insisted upon calling a physician from an unreasonable distance or upon going to a hospital at an unreasonable distance when a good hospital is available near by. The committee representatives felt, however, that the words "adequate, available and practicable" covered the objection.

There was some discussion, also, as to the advisability of suggesting to the Legislature that the county system or handling care for the indigent be established by law in place of the township system.

Dr. McLeod, at the request of the speaker, explained that the purpose of the committee was merely to lay down certain fundamentals to medical care, not to interfere in a matter which is after all up to the Legislature. He suggested that physicians who wish such a reform should go back to their own representatives, county commissioners and officials and work for a change, not as physicians but as public spirited citizens.

Dr. Wright suggested that the Legislative Committee, in the preamble to its recommendations to the Interim Committee, endorse and approve the use of medical advisory committees in each county to audit bills and settle difficulties.

Dr. W. F. Braasch suggested that a statement be included making it clear that the duty of the physician is first to take care of the sick, whether or not they have funds to pay for such care.

Dr. Wright suggested that the Committee also include in its preamble a general statement recognizing the responsibility of physicians under all circumstances to the sick.

The report of the Reference Committee was accepted section by section and then as a whole with the preamble and statements suggested.

The meeting adjourned at 3:15 p. m.

REVISED CONSTITUTION

THE following Revised Constitution and By-Laws are to be voted upon in their final form at the Annual Meeting in May. If they are passed at that time, they will go into effect immediately.

ARTICLE I—NAME OF THE ASSOCIATION

The name of this organization is the MINNESOTA STATE MEDICAL ASSOCIATION.

ARTICLE II—PURPOSES OF THE ASSOCIATION

The purposes of this Association are to bring into one compact organization the entire medical profession of the State of Minnesota and to unite with similar societies of other states to form the American Medical Association; to promote the science and art of medicine; to elevate the standard of medical education; and to promote public health.

ARTICLE III—COMPONENT SOCIETIES AND COUNCILOR DISTRICTS

Section 1. The membership of this Association shall be organized into county and district medical societies. The functions of each such society and its relation to the Association shall be defined in a charter issued to it by the Association. Every charter so issued shall be subject to amendment and to revocation by the Association in such manner as may be prescribed in the By-Laws of the Association.

Sec. 2. A component county society is an aggregation of members of this Association living in one county.

Sec. 3. A component district society is an aggregation of members of this Association living in such districts as to make the organization of individual county societies inadvisable, or an amalgamation of two or more counties.

Sec. 4. The House of Delegates may provide for the organization of such councilor districts as will promote the welfare of the Association, such districts to be composed of component societies.

ARTICLE IV—COMPOSITION OF THE ASSOCIATION

This Association shall consist of active, affiliate, honorary, and associate members, who conform with the provisions for such membership as hereinafter provided in the By-Laws.

ARTICLE V—HOUSE OF DELEGATES

The House of Delegates shall be the governing body of the Association, and shall consist of the delegates elected by the component societies to represent them. The following shall have the privileges of the floor, but without the right to vote: the President, the President-Elect, the Councilors, the Secretary, the Treasurer, the Past Presidents, and the Delegates to the American Medical Association.

ARTICLE VI—COUNCIL

The Council shall be the executive body of the Association. The Council shall have the full authority and power of the House of Delegates between Annual Sessions, unless the House of Delegates shall be called into special session as provided for in the By-Laws. The Council shall consist of the Councilors and ex-officio but without the right to vote, the President, the President-Elect, the immediate past President, the Secretary, the Treasurer, and the Speaker of the

House of Delegates. A majority of the Councilors shall constitute a quorum.

ARTICLE VII—ANNUAL SESSIONS AND MEETINGS

Section 1. This Association shall hold an Annual Session, during which there shall be held General Meetings, which shall be open to all registered members and guests.

Sec. 2. The general time and place for holding each Annual Session shall be fixed by the House of Delegates, provided that the exact date of the Session may be fixed by the Council.

Sec. 3. Special Meetings of either the Association or the House of Delegates may be called by the President on a two-thirds vote of the Council or upon petition by twenty delegates representing at least ten component societies.

Sec. 4. All Meetings of the Council may be called by the Chairman of the Council or upon petition by three Councilors.

ARTICLE VIII—OFFICERS

Section 1. The officers of this Association shall be a President, a President-Elect, two Vice-Presidents, a Secretary, a Treasurer, a Speaker and Vice-Speaker of the House of Delegates, and a Councilor for each Councilor District. These officers shall be elected by the House of Delegates as hereinafter provided in the By-Laws.

Sec. 2. There shall be elected at the Annual Session one who shall be known as President-Elect until the beginning of the next calendar year which is also the fiscal year of the Association, at which time he automatically becomes president, to serve as such for one year.

Sec. 3. The other officers, except the Councilors, shall be elected annually. The terms of the Councilors shall be for three years. As nearly as possible, one-third of the members of the Council shall be elected each year.

Sec. 4. The Delegates and Alternate Delegates to represent this Association at the House of Delegates of the American Medical Association shall be elected in accordance with the Constitution and By-Laws of the American Medical Association.

Sec. 5. Terms of office of the officers and committeemen, unless otherwise provided, shall be for a term of one year from January first following the date of their election.

All the officers shall serve until their successors are elected and installed.

Sec. 6. In case of vacancy in an office, unless otherwise provided for in this Constitution or By-Laws, the Council shall have the power to appoint temporarily a successor, until the House of Delegates shall meet and reelect one, or until the next Annual Session.

ARTICLE IX—FUNDS AND EXPENSES

The Annual Dues shall be determined by the House of Delegates, but shall not exceed the sum of Fifteen Dollars (\$15.00) per capita per annum except on a two-thirds vote of the Delegates present. Funds may also be raised from the Association's publications, by voluntary contributions, and in other manner approved by the House of Delegates. Funds may be appropriated by the House of Delegates to defray the expenses of the Association, for scientific and educational publications, and for such other purposes as will promote the advancement of medicine. All resolutions appropriating funds must be approved by the Council before action is taken thereon.

ARTICLE X—THE SEAL

The Association shall have a common Seal, and the House of Delegates shall have power to break, change or renew the same.

ARTICLE XI—AMENDMENTS

Section 1. The House of Delegates may amend any article of this Constitution by a two-thirds vote of the Delegates present at any Annual Session, provided that such amendment shall have been submitted to the membership in writing and published in the official Journal of the Association not less than three months before the meeting at which final action is to be taken.

Sec. 2. The House of Delegates, at any Annual Session, may instruct the Council to make any changes in the Articles of Incorporation in accordance with the law, which may appear desirable or which may be made necessary by any change or amendment to the Constitution and By-Laws of the Association.

Sec. 3. Upon adoption of this Constitution all previous Constitutions are thereby repealed.

ARTICLE XII—BY-LAWS

The authority for passing By-Laws to the Constitution of the Association shall be vested in the House of Delegates.

REVISED BY-LAWS

CHAPTER I—MEMBERSHIP

Section 1. All members in good standing of the component societies are members of this Association. A component society, however, which is delinquent in the payment of its annual assessments or the rendering of required reports to the Secretary of the Association shall not be permitted to participate in any of the business or proceedings of the House of Delegates or of the Association during such delinquency.

Sec. 2. Membership. The membership of this Association shall comprise all members of its component societies. Any person when he becomes a member shall agree to abide by the Articles of Incorporation, the Constitution and the By-Laws of this Association, or any changes which from time to time may be made in them, providing that he has been given notice of such change. He further agrees to abide by the Constitution and By-Laws of the Association regarding admission and expulsion and the code of ethics as laid down by the American Medical Association as it now exists or may hereafter be amended. However, any member convicted of a felony is automatically removed from membership and can only become a member by reapplication as a new member.

Sec. 3. Active Members. Active members shall comprise all the active members of component societies. No person shall be eligible for election to active membership in a component society unless he shall hold the degree of doctor of medicine, issued to him by an institution of learning accredited by the American Medical Association at the time of conferring such degree, and is licensed to practice in this state.

No person shall be considered an active member until his dues and assessments for the current year have been received at the headquarters of the Association.

Sec. 4. Affiliate Members. Affiliate members shall be those members of component societies (1) who through disability are unable to engage in the active practice of medicine, or (2) who have retired from the practice of medicine but who have been active members up to the time they applied for affiliate membership; provided however, that such member in either class shall have first been declared an affiliate member of such component society at its regular meeting, such action having been approved by the Council; and provided further, that such affiliate membership shall automatically cease and revert to its previous status upon the termination of the disability or upon the resumption

active practice. Affiliate members shall not pay dues and shall not have the right to vote or hold office.

Sec. 5. Honorary Members. The House of Delegates on recommendation of the Council may elect as honorary members any doctors of medicine who are distinguished for their services or attainments in the field of medicine, public health, research, or other scientific work contributing to medicine. Honorary members shall not pay dues and shall not have the right to vote or hold office.

Sec. 6. Associate Members. The House of Delegates on recommendation of the Council may elect as associate members any persons who are distinguished for their services in the allied sciences or in the field of public health. Associate members shall not pay dues and shall not have the right to vote or hold office.

Sec. 7. Nothing in Sections 3, 4, 5, and 6 shall in any manner invalidate an active, affiliate, honorary, or associate member in good standing at the time of the adoption of this Constitution and By-Laws.

Sec. 8. Guests. Any distinguished physician not a resident of this state who is a member of his own State Association may become a guest during an Annual Session on invitation of the officers of this Association, and shall be accorded the privilege of participating in all of the scientific work for that Session.

Sec. 9. Active members shall enjoy all the rights and privileges of the Association, including their subscriptions to MINNESOTA MEDICINE. Affiliate, Honorary, and Associate members shall have all the rights and privileges of active members except those of voting and holding office. They shall be exempt from all dues and assessments, except that they shall not be entitled to copies of MINNESOTA MEDICINE without subscription.

CHAPTER II—HOUSE OF DELEGATES

Section 1. Each component society shall be entitled to send to the House of Delegates each year one delegate, or one corresponding alternate delegate, for every fifty full-paid members, and one for any fraction thereof, but each component society which has made its annual report and paid its assessments as provided in this Constitution and By-Laws, shall be entitled to one delegate.

With the approval of the Council, a component society which previously has been entitled to a delegate or delegates, upon merging with an adjoining component society may retain its right to representation in the House of Delegates provided such society maintains a membership of five or more members.

If there are no delegates or alternate delegates from component societies present at the Annual Session, the House of Delegates may elect acting delegates from among active members of such component societies present at the Session. These acting delegates shall have all the rights and privileges of regular delegates at the Session to which they are elected, but only in the absence of the regular or alternate delegates.

Sec. 2. Twenty delegates shall constitute a quorum. All meetings of the House of Delegates shall be open to members of the Association.

Sec. 3. The House of Delegates, hereinafter termed the House, shall meet on the first day of the Annual Session. It may adjourn from time to time as may be necessary to complete its business, provided that its hours shall conflict as little as possible with the General Meetings. The order of business shall be arranged as a separate section of the program.

Sec. 4. The House shall, at its second meeting at the Annual Session, elect all the officers of the Association except the President. No delegate shall be eligible to the office of President-Elect, and no person shall be elected to any office who is not in attendance upon

that Annual Session and who has not been a member of the Association for the past two years. The Speaker and Vice-Speaker of the House may but need not be elected from among the members of the House.

Sec. 5. The House shall, at its second meeting at the Annual Session elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body, and as is hereinafter provided.

Sec. 6. The chairman of the various appointed committees may attend the regular meetings of the House but without the right to vote. They may participate in debate on their own reports, and on invitation of the House.

Sec. 7. The Speaker, to expediate proceedings, shall appoint from the House such reference committees as he deems necessary to carry out the business of the House.

Sec. 8. The House shall, upon application, provide and issue charters to county or district societies organized to conform to this Constitution and By-Laws.

Sec. 9. The House shall divide the State into Councilor Districts, specifying what counties each district shall include, and may organize in each a medical society of the Councilor District.

CHAPTER III—ELECTION OF OFFICERS

Section 1. The manner of elections shall be determined by the assembled House, and a majority of the votes cast shall be necessary to elect.

Sec. 2. The election of officers shall be the first order of business of the House after the reading of the minutes at its second meeting.

Sec. 3. Any person known to have solicited votes for or sought any office within the gift of this Association shall be ineligible for any office for two years.

CHAPTER IV—DUTIES OF OFFICERS

Section 1. The President shall preside at all meetings of the Association except at the meetings of the House. He shall be an ex-officio member of the Council and the House, but without the right to vote. He shall appoint, with the approval of the Council, all scientific committees, not otherwise provided for. He shall deliver an annual address before the General Assembly and the House and perform such other duties as are herein provided in the Constitution and By-Laws.

Sec. 2. The President-Elect shall be an ex-officio member of the Council and House, but without the right to vote.

Sec. 3. The Vice-Presidents shall assist the President in the discharge of his duties. In case of the President's death, resignation, removal, or inability to function, the First Vice-President shall officiate during the unexpired term.

Sec. 4. The Speaker shall preside at the meetings of the House and shall perform such duties as custom and parliamentary usage require. He shall appoint the reference committees of the House. He shall have the right to vote only when his vote shall be the deciding vote. He shall be an ex-officio member of the Council but without the right to vote.

Sec. 5. The Vice-Speakers shall officiate for the Speaker in the latter's absence or at his request. In case of death, resignation, or removal of the Speaker, the Vice-Speaker shall officiate during the unexpired term.

Sec. 6. The Treasurer shall give bond in such sum as the Council may require. The Council shall execute said bond with some indemnity company at the expense of the Association. The Treasurer shall be ex-officio member of the Council and the House, but without the right to vote. He shall demand and receive all funds due the Association together with be-

quests and donations. He shall pay money out of the treasury only on a written order of the Chairman of the Council, countersigned by the Secretary of the Association; he shall subject his accounts to such examinations as the House may order, and he shall annually render an account of his expenditures and of the state of the funds in his hands. The amount of his salary shall be fixed by the Council. The Council may at its discretion allow the Secretary a revolving fund of such moneys as it deems advisable. This money may be expended by the Secretary for such administrative purposes as he deems necessary.

Sec. 7. The Secretary shall give bond in such sum as the Council may require. The Council shall execute said bond with some indemnity company at the expense of the Association. The Secretary shall attend the General Meetings of the Association and the meetings of the House, and shall keep minutes of their respective proceedings in separate record books. He shall be ex-officio Secretary of the Council, but without the right to vote. He shall be custodian of all record books and papers belonging to the Association, except such as properly belong to the Treasurer, and shall keep accounts of and promptly turn over to the Treasurer all funds of the Association which come into his hands.

He shall provide for the registration of the members and delegates at Annual Sessions and shall act as Business Manager for the Annual Session. Under direct supervision of the Council, he shall arrange for and have charge of the scientific and technical exhibits; collect and bank such funds received in connection thereto. He shall maintain a checking account for current expenses of the exhibits throughout the year but shall turn the balance of the funds not required into the general treasury.

He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall employ such assistants as may be ordered by the Council, and shall make an annual report to the House. He shall supply each component society with the necessary blanks for making their annual reports; shall keep an account with the component societies, charging against each society its assessments, collect the same, and at once turn it over to the Treasurer. He shall prepare and issue all programs. The amount of his salary shall be fixed by the Council. The Secretary shall present to the Association on the last day of the Annual Session, a summary of the proceedings of the Council and the House.

He shall with the coöperation of the secretaries of the component societies keep a register of all the legal practitioners of the State by counties, noting on each his status in relation to his component society, and on request, shall transmit a copy of this list to the American Medical Association.

CHAPTER V—COUNCIL

Section 1. The Council shall have full authority and power of the House between Annual Sessions, unless the House shall be called into session as provided in the Constitution and By-Laws. It shall consist of the Councilors and ex-officio but without the right to vote, the President, the President-Elect, the Secretary and Treasurer of the Association, and the Speaker of the House. A majority of its members shall constitute a quorum.

Sec. 2. The Council shall serve as the Finance Committee of the Association and perform such other functions as may be prescribed in the Constitution, By-Laws, and the Articles of Incorporation.

Sec. 3. The Council shall be the board of censors of the Association. It shall consider all questions involving the rights and standing of members, whether

in relation to other members, to the component societies or to the Association. All questions of an ethical nature brought before the House or the General Meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or component societies on which an appeal is taken from the decision of an individual Councilor, and its decision in all such matters shall be final.

Sec. 4. The Council shall meet on the first day of the Annual Session and daily during the Session and at such other times as necessity may require, subject to the call of the Chairman, or on petition of three Councilors. It shall elect a chairman and a clerk, who, in the absence of the Secretary of the Association, shall keep a record of its proceedings. It shall, through its chairman, make an annual report to the House.

Sec. 5. The Council shall provide for and superintend the publication and distribution of all proceedings, transactions and memoirs of the Association, and shall have authority to approve the appointment of the editor and such assistants as the Editing and Publishing Committee deem necessary. It shall determine the salaries of all employees of the Association. All money received by the Council and its agents, resulting from the discharge of the duties assigned to them, must be paid to the Treasurer of the Association. As the Finance Committee it shall annually supervise the auditing of the Association and present a statement of the same in its annual report to the House, which report shall also specify the character and cost of all the publications of the Association during the year and the amount of all other property belonging to the Association under its control, with such suggestions as it may deem necessary.

Sec. 6. The Council shall fill any vacancy not otherwise provided for which may occur during the interval between Annual Sessions of the House; the appointee shall serve until his successor has been elected and installed.

Sec. 7. The Council shall nominate and present to the House a list of nominations for Delegates to the American Medical Association to be voted upon by the House. Additional nominations may be made from the floor of the House.

Sec. 8. The Council may at its discretion; employ expert assistance in auditing the various records of the officers and committees of the Association; employ such help as it may deem necessary to facilitate the work of the Association; and allot for expenditures such moneys as are budgeted for the Committee on Public Policy and Legislation.

Sec. 9. The Council shall discharge such duties as are provided by law.

Sec. 10. The Council shall be empowered to invest and reinvest such monies as may be available from time to time for the creation and building up of a reserve or sinking fund. A three-fourths vote of the Council shall be necessary to authorize expenditures from this fund other than for investment or reinvestment. It may at its discretion engage the services of a Trust Company to assist in the investment and reinvestment of this fund.

Sec. 11. The Council shall appoint all non-scientific committees, not otherwise provided for in the By-Laws.

Sec. 12. Each Councilor shall be organizer, peace-maker and censor for his district. He shall visit the counties in his district when necessary for the purpose of organizing component societies where none exists; for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the Council on a proper itemized statement, and each Councilor may

receive as compensation a per diem of \$10.00 while engaged in making his official visits to the counties in his district, or in attendance at duly authorized special meetings of the Council, but this shall not be construed to include his expense in attending the Annual Session of the Association.

CHAPTER VI—COMMITTEES

Section. 1. There shall be two classes of committees: scientific and non-scientific. All committees shall consist of five members unless otherwise specified in this Constitution and By-Laws. The President may at his discretion, with the approval of the Council, increase or decrease the number of members of any committee. The President and Secretary of the Association shall be ex-officio members of all committees. All committees shall make an annual report to the House.

Sec. 2. The scientific committees shall be appointed by the President with the approval of the Council and shall consist of the following:

Scientific Assembly

a. Local Arrangements

Cancer
Diabetes
Heart
Syphilis and Social Diseases
Deafness Prevention and Amelioration
Hospitals and Medical Education

a. Public Health Nursing

b. Schools for Laboratory Technicians

Maternal Welfare
Military Affairs
Historical

And such other scientific committees as may be deemed necessary.

Sec. 3. The non-scientific committees shall be appointed by the Council and shall consist of the following:

Public Policy and Legislation
Interprofessional Relationship
University Relations
Public Health Education
Editing and Publishing
Medical Economics
County Contact

And such other non-scientific committees as may be deemed necessary.

Sec. 4. The duties of the scientific committees shall be as follows:

1. Committee on Scientific Assembly. This committee shall be subdivided into three sections: Section on Medicine, Section on Surgery, and Section on Specialties. The President shall appoint annually a secretary for each of the sections, which secretary shall automatically become chairman of his section the following year, thus serving a two year term, with the exception that for the year 1938, the President shall also appoint a chairman of each section for a term of one year.

The membership of the Committee on Scientific Assembly shall consist of the Chairman and Secretary of the sections on Medicine, Surgery, and Specialties, the President, the President-Elect, the Secretary of the Association, and ex-officio, the Chairman of the Committee on Local Arrangements. The President shall act as Chairman. The Secretary of the Association shall have general charge of the arrangements and shall act as Business Manager for the scientific and technical exhibits under the direct supervision of the Council. It shall be the duty of the section chairmen to preside over the meetings of their respective sections. The

secretary of the section shall preside for the chairman in the latter's absence or at his request.

This Committee shall collaborate with the Committee on Local Arrangements to the best interests of the Annual Session.

a. The Committee on Local Arrangements. With the approval of the Council, the Committee on Local Arrangements shall be appointed by the component society of the county in which the Annual Session is to be held; it shall provide suitable accommodations for the meeting places of the Association and of the House, and of their respective committees; and the Chairman of the Committee on Local Arrangements shall assist the Secretary of the Association in making local arrangements.

2. The Committee on Cancer. This committee shall consist of fifteen members, five of which shall be appointed annually for a three year period. Its function shall be to keep the profession informed as to the latest scientific knowledge on the subject of cancer and to encourage local education of the public.

3. The Committee on Diabetes. Its function shall be to encourage the extension of medical knowledge and research into causes and treatment of diabetic disease and also to cooperate with the Committee on Public Health Education in the extension of necessary knowledge of the disease.

4. The Heart Committee. Its function shall be to promote scientific interest and progress in all phases of heart disease and to extend to the public through the Committee on Public Health Education essential education in the prevention and treatment of the disease.

5. The Committee on Syphilis and Social Diseases. Its function shall be to study the problems of prevention and control of syphilis and social diseases.

6. The Committee on Deafness Prevention and Amelioration. Its function shall be to stimulate interest in the prevention and amelioration of this affliction.

7. The Committee on Hospitals and Medical Education. Its function shall be: to give information and recommendations, if indicated to the Association in matters pertaining to medical education in the State; to encourage and develop local comprehensive programs for postgraduate instruction and in cooperation with the faculty of the University to arrange for additional courses to be given at a minimum of expense and loss of time; to maintain jurisdiction over the standardization of hospitals within the State, and in cooperation with the American Medical Association which maintains bureaus of standardization to see that such standards are maintained. The chairman of this committee shall be a representative of this Association at the annual congress of Medical Education and Medical Licensure, Public Health and Hospitals of the American Medical Association.

a. The Committee on Public Health Nursing. Its function shall be to study and act in an advisory capacity in conjunction with the Minnesota Organization for Public Health Nursing.

b. The Committee on Schools for Laboratory Technicians. Its function shall be to investigate and report on all schools for laboratory technicians; to formulate standards and makes recommendations as to the qualifications of schools as a guide to members who wish to engage the services of graduates of these schools.

8. The Committee on Maternal Welfare. Its function shall be to promote medical interest and progress in maternal and child welfare; to assist, through the Committee on Public Health Education, in the education of the public.

9. The Committee on Military Affairs. Its function shall be to maintain a constant contact with all branches of the military service and to promote and assist a proper medical cooperation at all times with the army and navy.

10. The Historical Committee. Its function shall be to assemble records of the medical history of this Association.

Sec. 5. The duties of the non-scientific committees shall be as follows:

1. The Committee on Public Policy and Legislation. This Committee shall include the President and Secretary of the Association. Under the direction of the House, it shall represent the Association in securing and enforcing legislation in the interest of public health and scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, state and national affairs.

2. The Interprofessional Relationship Committee. Its function shall be to endeavor to bring about a better understanding and cooperation between the different interprofessional groups allied with the practice of medicine and also other groups that should cooperate in the practice of medicine.

3. The Committee on University Relations. Its function shall be to act as a contact committee with the University of Minnesota and its officials. Such problems as affect the medical profession shall be referred to this committee and they shall bring it to the attention of the proper authorities.

4. The Committee on Public Health Education. This committee shall consist of an executive committee and sub-committees.

The standing sub-committees shall be:

- Child Welfare
- Speakers' Bureau
- Editorial
- Tuberculosis
- Radio
- Red Cross
- First Aid

The chairman may appoint such other sub-committees as he deems advisable and assign to each sub-committee as many members as he deems proper, subject to the approval of the Council.

The function of this committee shall be, first to strive to develop an intelligent public viewpoint toward the medical profession and public health education by means of the press, the lecture platform, and the radio; second, to cooperate with the various agencies throughout the state whose function is the promotion of public health, and whose governing bodies are composed in whole or in part of laymen, so that from a medical standpoint these agencies shall be intelligently administered; third, to use such measures throughout the State as may be necessary to eliminate fraudulent medical advertisements from the public press; fourth, to aid and encourage each component society to conduct at least one annual public health meeting.

5. The Editing and Publishing Committee. This committee shall consist of five members, one of which shall be appointed annually for a period of five years.

The Editing and Publishing Committee shall have the responsibility of editing and publishing MINNESOTA MEDICINE; the committee shall appoint an editor and business manager and a sufficient number of assistants and shall determine their compensation; this shall be subject to the approval of the Council.

The State Association shall pay the Editing and Publishing Committee the sum of two dollars per year per active member in consideration for which each active member of the Association shall receive a copy of the Journal for one year.

Associate editors may be appointed by the Editing and Publishing Committee.

A section on medical economics shall be printed each month in MINNESOTA MEDICINE under the direction of the Council. The chairman of the Committee on Medical Economics shall have charge of this section under the title of assistant editor. He shall be ex-officio member of the Editing and Publishing Committee and shall attend the meetings of this body.

In matters of general policy pertaining to the welfare of the Association, the Editing and Publishing Committee shall defer to the requests from the Council.

6. The Committee on Medical Economics. This committee shall consist of an executive committee composed of the chairman, the chairmen of sub-committees, and the chairmen of the Committee on Public Policy and Legislation and the Committee on Public Health Education. The duties of this executive committee shall be the coordinating of the general program. Three members shall constitute a quorum.

The sub-committees of the Medical Economics Committee shall be appointed by the chairman of the Medical Economics Committee with the approval of the Council, and shall consist of the following:

a. The Editorial Committee. It shall be responsible for the editing and compiling of the medical economics section which is published each month in MINNESOTA MEDICINE. The chairman of the Committee on Medical Economics shall be the chairman of this sub-committee.

b. The Committee on Professional Education in Medical Ethics and Social and Economic Trends. Its function shall be: (1) to promote knowledge in medical ethics and social and economic trends among medical students and the medical profession in Minnesota. It shall endeavor to secure and maintain a course on these subjects at the Medical School at the University of Minnesota.

c. The Medico-Legal Advisory Committee. Its function shall be: (1) to study the questions pertaining to insurance, especially malpractice insurance as it affects the profession; and (2) to study and advise in legal affairs that affect the profession.

d. The Committee on State Health Relations. Its function shall be: (1) to study the activities of the various State or Governmental Agencies and their relation to the practice of medicine; and (2) to cooperate with these various State and Governmental Agencies whose function is the promotion of public health in maintaining the welfare of the public.

e. The Committee on Low Income and Indigent Problems. Its function shall be to study and present methods and plans for the care of these two groups.

This committee shall make its reports to the executive committee of the Medical Economics Committee. All plans concerning the medical care of the indigent, before being presented to the membership at large must be approved by the executive committee of the Medical Economics Committee and the Council or the House.

f. The Committee on Industrial Relations. Its function shall be to discuss and recommend a policy on the various industrial questions that arise and that affect the medical profession. It shall work in cooperation with the industrial organizations to improve the conditions that affect the medical profession.

g. The Committee on Contract Practice. Its function shall be to study existing forms of contract practice and to inform and advise the executive committee of the Medical Economics Committee upon these and upon all proposed plans for contract practice in Minnesota.

7. The County Contact Committees of Three. They shall consist of three physicians practicing in the county in which they live, and appointed by their local component societies. Their functions shall be to study the medical and health problems so far as they are related to the best interests of the public and cooperate with

REVISED BY-LAWS

each component medical society and the Medical Economics Committee.

CHAPTER VII—COUNTY AND DISTRICT SOCIETIES

Section 1. All county and district societies now in affiliation with the Association or those which may hereafter be organized in this State, which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall, on application, receive a charter from and become a component part of the Association.

Sec. 2. As rapidly as can be done after the adoption of this Constitution and By-Laws, a medical society shall be organized in every county in the State in which a component society exists, and charters shall be issued hereto.

Sec. 3. Charters shall be issued only upon approval of the House, and shall be signed by the President and Secretary of the Association. The House shall have the authority to revoke the charter of any component society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

Sec. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, all members should be brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

Sec. 5. In sparsely settled sections the House shall have authority to organize the physicians of two or more counties into societies to be designated by hyphenating the names of two or more counties so as to distinguish them from other classes of societies, and these societies, when organized and chartered, shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized separately.

Sec. 6. Each component society shall have general direction of the affairs of the profession in its county or district, and its influence shall be constantly exerted for bettering the scientific, moral, and educational condition of the county or district; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county or district.

Sec. 7. Each component society shall judge of the qualifications of its own members, but, as such societies are the only portals to this Association and to the American Medical Association, ample opportunity to become a member shall be given to every physician in the county or district, who is eligible according to the provisions in this Constitution and By-Laws.

Sec. 8. Any physician who may feel aggrieved by the action of the society of his county or district in refusing him membership, or in suspending, censoring, or expelling him, shall have the right to appeal to the Council, and if he desires, to the Judicial Council of the American Medical Association. Decision of the latter shall be final.

Sec. 9. In hearing appeals the Council may admit oral or written evidence, as in its judgment will best and most fairly present the facts, but in case of every appeal, both as a Board and as individual Councilors, in district and county work, efforts at conciliation and compromise shall precede all such hearings.

Sec. 10. A physician living on or near a county line may hold his membership in the component society most convenient for him to attend, on permission of the society under whose jurisdiction he resides.

Sec. 11. At some meeting in advance of the Annual Session, each component society shall elect a delegate or delegates and an alternate or alternates to represent it in the House, in the proportion of one delegate to

each fifty members or any fraction thereof, and the secretary of each society shall send a list of such delegates to the Secretary of the Association two months before the date fixed for the Annual Session.

Sec. 12. The secretary of each component society shall keep a roster of its members and of the non-affiliated registered physicians of the county or district, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. In keeping such roster the secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county or district, and in making his annual report he shall be certain to account for every physician who has lived in the county or district during the year.

Sec. 13. The secretary of each component society shall forward the assessment of its members together with its roster of officers and members, list of delegates, and list of non-affiliated physicians of the county or district to the Secretary of the Association each year before December 31.

Sec. 14. Each component society which fails to pay its assessment or make the report required, on or before December thirty-first, shall be held as suspended and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the Association or of the House until such requirements have been met.

Sec. 15. The annual per capita dues to the Association of the members of the component societies shall be determined by the House and shall be paid and forwarded as hereinbefore provided, being payable on or before January first of the year for which they are levied.

CHAPTER VIII—MISCELLANEOUS

Section 1. The Articles of Incorporation, the Constitution, and By-Laws of the Association shall be binding on every county and district society and every member of every such society; anything in the Articles of Incorporation, the Constitution, or the By-Laws of any such society to the contrary notwithstanding.

Sec. 2. A member of this Association must be a member of some component society and conversely a member of a component society must be a member of this Association. An action of the House or of the Council shall be binding upon its members unless otherwise provided.

Sec. 3. The Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

Sec. 4. The deliberations of the Association shall be governed by parliamentary usage as contained in Robert's Rules of Order, when not in conflict with this Constitution and By-Laws.

Sec. 5. All papers read before the Association or any of the societies shall become its property. Each paper shall be deposited with the Secretary of the Association when read.

Sec. 6. The time required for delivery of any paper or address before the Association shall be left to the discretion of the Committee on Scientific Assembly.

CHAPTER IX—AMENDMENTS

These By-Laws may be amended at any Annual Session by a majority vote of all the delegates present at the Session, after the amendment has lain on the table for one day.

Upon the adoption of these By-Laws all previous by-laws are thereby repealed.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

Medical Broadcast for January

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 11:45 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

January 6—Carbon Monoxide Poisoning

January 13—Neglected Head Injuries

January 20—Myxedema

January 27—Crooked Teeth.

International Conference on Fever Therapy

The First International Conference on Fever Therapy will be held March 29, 30 and 31, 1937, at the College of Physicians and Surgeons, Columbia University, New York City! The official language of the conference will be English.

Baron Henri de Rothschild, Paris, is chairman and Dr. William Bierman, New York, secretary of the conference.

Subjects to be discussed are: Physiology, pathology and methods of production of fever; the treatment by fever of miscellaneous diseases, including syphilis.

Registration should be made with the secretary, Dr. William Bierman, 471 Park Avenue, New York City. The registration fee is \$15.00.

Judd Lecture

The Fourth Annual Lecture in the E. Starr Judd Lectureship in Surgery, established at the University of Minnesota by the late Dr. E. Starr Judd, will be given by Dr. Evarts A. Graham, Professor of Surgery, Washington University School of Medicine, and Surgeon-in-Chief, Barnes and St. Louis Children's Hospitals, St. Louis, Missouri. The lecture will be held in the Chemistry Auditorium on the University campus in Minneapolis on Wednesday, February 3, at 8:15 p. m. The subject of Dr. Graham's lecture will be "Accomplishments of Thoracic Surgery and its Present Problems."

Kandiyohi-Swift-Meeker Societies

The annual meeting of the Kandiyohi-Swift-Meeker County Medical Society will be held at the Lakeland Hotel, Willmar, Minn., Tuesday, January 29, 1937, at 6:30 P. M., for the election of officers and other business.

Discussion of Medical Economic questions, including

the new Social Security proposition in State Medicine will form part of the evening's program. These are times when the profession must be eternally vigilant. Every member is urged to attend.

Membership dues for both county and state associations are payable January 1, 1937.

The Range Society

The December meeting of the Range Medical Society was held on December 15 at the Park Hotel at Eveleth. An excellent program was provided by several physicians from Duluth and Superior who presented a clinical and pathological conference, ably presided over by Dr. E. L. Tuohy.

New officers were elected as follows: president, Dr. B. S. Adams; vice president, Dr. H. N. Sutherland; secretary, Dr. P. H. MacFarlane; censors, Dr. Arnold Malmstrom and Dr. R. A. Salter.

Red River Valley Society

The Red River Valley Medical Society held its annual meeting the evening of December 8, 1936, at 6:30 p. m., in the Hotel Crookston, Crookston. A dinner preceded the meeting, attended by the members, guests, and Women's Auxiliary. Four guests and thirty-seven members were present.

The program was given chiefly to medical economics, the guest speakers being Dr. W. W. Will of Bertha, President of the Minnesota State Medical Association, Dr. W. L. Burnap, Fergus Falls, Councilor of the Eighth District, and Mr. R. R. Rosell of the State office.

The following officers were elected for the year 1937:

President	Dr. J. L. Delmore, Roseau
Vice President	Dr. C. W. Froats, Thief River Falls
Secretary-Treasurer	Dr. C. L. Oppegard, Crookston
Delegates	Dr. J. F. Norman, Crookston
	Dr. O. E. Locken, Crookston
Alternates	Dr. H. M. Blegen, Warren
	Dr. W. F. Mercil, Crookston
Censor for 3 years.....	Dr. W. G. Paradis, Crookston

Rice County Society

The Rice County Medical Society held its regular meeting in the Faribault Clinic Rooms, Wednesday evening, December 9, 1936.

Dr. W. D. Beadie, superintendent of Mineral Springs Sanatorium, was the guest speaker and addressed the members on the subject "The Significance of Rest in Tuberculosis." He illustrated his talk with lantern slides.

Election of officers resulted as follows: President, Dr. F. R. Huxley, Faribault; vice president, Dr. O. P. Thorson, Northfield; secretary-treasurer, Dr. C. J. Plonske, Faribault; delegate, Dr. F. J. Lexa, Lonsdale; alternate delegate, Dr. A. M. Hanson, Faribault.

Dr. Charles E. Light of Northfield was elected to membership.

PROCEEDINGS of the MINNESOTA ACADEMY OF MEDICINE

Meeting of November 11, 1936

The Minnesota Academy of Medicine held its regular monthly meeting at the Town and Country Club on Wednesday evening, November 11, 1936. The meeting was called to order by the president, Dr. Thomas S. Roberts. There were forty-seven members and one guest present.

Minutes of the October meeting were read and approved.

Upon ballot the following men were elected as candidates for active membership in the academy:

Dr. E. A. Regnier, Minneapolis

Dr. Justus Ohage, St. Paul

Dr. Gordon A. Kamman, St. Paul

Dr. Carl B. Drake read the following Memorial to Dr. H. T. Nippert and a motion was passed that it be read upon the records of the Academy and a copy sent to the family

HENRY THEODORE NIPPERT

DR. HENRY THEODORE NIPPERT, known to his more intimate friends as Nip, was born in Heilbron, Wurtemberg, Germany, on February 12, 1868, the son of Reverend Dr. Louis Nippert and Adelaid Lindemann Nippert. His father was an American citizen and was sent to Germany by the Methodist Church to promote Methodism in Germany and Switzerland. Henry Nippert received his early education at Frankfurt-on-Main, graduating from the gymnasium at the age of seventeen, which accounts for his somewhat German accent and is frequently having been taken for a German. On the family's return to America in 1886, he came to Minneapolis, where his brother, the late Dr. Louis Nippert, had already begun practice, and obtained a job as a drug store clerk, which position he held for a year and a half. He then moved to Cincinnati and after two years of study obtained the degree of Ph.G. from the Cincinnati College of Pharmacy. Soon thereafter he began the study of Medicine at the Miami Medical College, a department of the University of Cincinnati, where he was graduated in 1891. He took his internship at the Cincinnati General Hospital.

On August 2, 1893, Henry Nippert was married to Bertha Elizabeth Wendt, of Newport, Kentucky, and began practice in St. Paul. That same year he joined the Ramsey County Medical Society and was president of the Society in 1916. For twenty-five years he had a medical service at the Ancker Hospital and gave clinics to students of the Hamline and University Medical Schools, resigning from the staff in 1919 in favor of younger members of the profession. Henry Nippert joined the Minnesota Academy of Medicine in 1916 and read his thesis "Empyema in Infancy and Childhood" on May 10, 1916, the paper having been published in the St. Paul Medical Journal the same year (Vol. 18, p. 270, 1916).

Henry Nippert died on July 4, 1936, while taking a swim at his summer home on Big Sand Lake. He is

survived by his widow; three daughters, Mrs. Vernon D. E. Smith and Mrs. John B. McGrath of St. Paul, and Mrs. Arnulf Ueland of Minneapolis; a son, Carl L. Nippert of St. Paul; two brothers, Dr. Edward Nippert of Los Angeles and Judge Alfred K. Nippert of Cincinnati; three sister, Mrs. Louis Hemlinge of Seattle, and the Misses Eleanor and Mary Nippert of Cincinnati.

Henry Nippert had a very high degree of personal integrity. He was exceedingly frank with his patients where the limitations of therapy were obvious and in every way was a very practical man. His patients, who, particularly in his early years of practice, were largely among the German element of St. Paul, trusted him and regarded him as a friend because of the real sympathy he showed them.

One of his outstanding qualities was his keen sense of humor. He loved a practical joke and could always see the humorous side of a situation. He was a convivial soul.

He loved the country and enjoyed to the utmost the summer months spent at his cabin on Big Sand Lake in northern Minnesota with his family.

Although he never contributed a great deal to medical societies, he was a regular attendant and made staunch friends among his colleagues. He was tolerant of those who held opinion differing from his own and was most considerate of those younger and less experienced in the practice of medicine.

His philosophy towards life, his devotion to his country, friends and profession are well portrayed in the account of his life written by himself some time before his death, which was read at his funeral and published in the August number of the State Journal.

The Minnesota Academy of Medicine has lost one of its best loved members. The society's sincere sympathy is extended to his bereaved family.

(Signed) The Committee:

FRANK E. BURCH,

WILLIAM DAVIS,

CARL B. DRAKE, *Chairman*.

The scientific program followed.

ASEPTIC URETERO-SIGMOIDOSTOMY

A New Method Providing Definite Asepsis in Respect to Both Fecal and Urinous Soiling

FREDERIC E. B. FOLEY, M.D.

Saint Paul

Synopsis

There is no general agreement concerning the importance of fecal soiling in operations for anastomosis of ureter with bowel. It is certain this factor is of some consequence and may, on occasions, determine a fatal outcome.

Avoidance of fecal soiling may be of importance in one or both of two ways. First of these is prevention of infection of the peritoneum and the risk of peritonitis incident to it. Second, and perhaps of greater importance as an object of asepsis, is prevention of infection of tissues at the site of anastomosis and impairment of repair processes incident to it. In the repair process of union between the ureter and the layers of bowel wall, primary union with absence of inflammatory infiltration and cicatrization resulting from infection should be considered desirable for production of a functioning one-way valve and avoidance of urinary obstruction by contraction of the stoma.

Most writers have appeared to think of "aseptic anastomosis" in terms only of avoiding contamination by bowel content and have appeared to regard soiling by urine content as of no importance. There is no assurance that soiling by infected urine does not have importance similar to that of fecal soiling and in these same ways.

Coffey's description of his "Technic No. 3" refers to it as an aseptic method. Quite obviously neither this method or Higgins' extension of it is aseptic. In both methods a "transfixion suture" embracing ureter and bowel walls is tied tightly and establishes a fistulous communication by sloughing through both walls. In placing this suture it passes into and out of both ureter and bowel lumina and contaminates the site of union with both ureter and bowel contents.

The method of Poth more closely approximates definite asepsis but does not give positive protection in this direction. Description and illustration of the method as employed in experimental animals shows it to be entirely too troublesome and cumbersome for clinical use.

The method described here and illustrated by lantern slides is definitely aseptic in respect of both fecal and urinous soiling. It involves use of a newly devised and very simple snare or guillotine instrument within the bowel lumen. With the bowel submucosa exposed by longitudinal incision of the muscularis, the ligated end of ureter, pushing a small invaginated tent of bowel submucosa before it, is inserted into the snare. The two structures are held in the grip of the snare while the ureter is imbedded in the bowel wall by suture and the abdomen closed, all of which is accomplished without even a suture needle penetrating the lumen of either bowel or ureter. After an interval of time allowed for the tissue spaces at the site of transplant to become sealed off, a cutting current is supplied to the instrument as the snare amputates within the bowel lumen the ligated ureter end and invaginated tent of bowel submucosa covering it, thus establishing the uretero-intestinal communication.

The instrument and method have been employed in one case reported in summary as follows:

Ancker Hospital No. A450096. The patient was a female, aged sixty-two. There was extensive carcinoma of urethra with invasion of vesical neck and trigone. Complete retention of urine was present; and there was diminished phthalein excretion, also nitrogen retention.

Excretory urography showed normal pelvis and ureter. The urethra was dilated and constant drainage with a indwelling catheter improved the renal function and general condition. Irradiation with radium elements gave no favorable effect.

Bilateral transplantation of the ureters with a view to total cystectomy was determined upon.

On Dec. 3, 1935, the right ureter was transplanted by the method described. The procedure was executed with perfect facility. The submucosal tent and ureter end were amputated four hours later. Urine came from the bowel on the third day. General condition was excellent on the eleventh day. Temperature elevation and signs of broncho-pneumonia were evident on the twelfth day. The patient died of broncho-pneumonia on the fifteenth day.

Postmortem examination showed excellent healing and union at the site of transplant, no peritoneal exudate or infiltration and no dilatation of the ureter or kidney pelvis.

Discussion

DR. ARNOLD SCHWYZER (St. Paul): This method looks quite typical of Dr. Foley—it is neat in conception. Nevertheless, the other methods are less complicated and gave me good results. I wonder whether with this instrument we would not get a stricture through the cauterization of the end of the ureter. I think for those of us who have operated much on the large intestine, a fine thread running through the mucosa of the gut would not mean very great danger of spreading infection, especially as long as there is drainage along the thread right into the gut. In order to avoid a stricture at the ureter opening, I have cut the ureter on a slant. The side with the tip was placed toward the lumen of the gut. In this way, it somewhat protects the opening (for the first days). Again, I wonder whether it would not be well possible to have any mishap with this method. The patient might move around while the instrument is in place. Another question comes up whether the end of the ureter protrudes far enough into the gut to insure against a certain amount of retraction which will follow. Notwithstanding these uncertainties, which practical experience has to decide, the procedure has neat asepsis to its credit.

DR. FOLEY (in closing): By way of reply to Dr. Schwyzer's criticism of the method I want to say that it is not cumbersome. By comparison with the usual method of transplanting the ureter to bowel, this instrument and method actually facilitate the procedure. Having the ligated end of ureter held transfixed to the bowel wall in the grip of the instrument is considerably more convenient than inserting it through a stab opening in the submucosa and then placing the fixation sutures without the ureter held in place.

Dr. Schwyzer refers to the results of uretero-sigmoidostomy by usual methods as perfectly satisfactory. This opinion is not generally shared. The immediate operative mortality is out of proportion to the magnitude of the procedure. Most reports are based on

es in which operation has been performed according to a uniform technic planned to establish a functioning one-way valve. In spite of a uniform method being employed in the case of a series, the results among the cases are not uniformly good. There is considerable evidence to show that the eventual end-result depends on whether or not a good functioning one-way valve has been produced by operation. In the presence of satisfactory valve function the ureter and pelvis do not dilate, the kidney does not become infected and functions normally; in the absence of valve function or in the presence of cicatrization or obstruction at this site, the ureter and pelvis dilate, the kidney becomes infected and finally functionless. It seems to me it is unlikely that infection of tissues at the site of transplant is an important factor in determining whether or not a functioning valve will result. With cicatrization and scarring, the result of infection, I would expect either a poorly-functioning valve or obstruction. An aseptic method may diminish the incidence of pyelitis but its real value, if any, appears to me to lie in avoiding infection of the site of transplant and inflammatory thickening of the valve-forming tissues incident to this infection. Such changes occurring with non-aseptic methods appear to me as probably responsible for the poor results.

I have offered the method at this time and without substantial clinical experience to endorse it because I do not have opportunity for animal experimentation and only a very small clinical material, and in the hope that others with better opportunity than mine in these directions will undertake to determine what the value and uses of the method may be.

EXTENSIVE THROMBOPHLEBITIS COMPLICATING MASTOIDITIS

MARTIN NORDLAND, M.D., and WALTER E. CAMP, M.D.

Minneapolis

Lantern slides were shown to demonstrate the anatomy and the operative procedures involved. (Paper to be published in full, in MINNESOTA MEDICINE, later.)

Summary

During the past year the authors had the privilege of seeing two patients with extensive thrombophlebitis of the cranial venous sinuses and internal jugular vein, complicating acute mastoiditis. One of these patients died and the other recovered. The cases are reported in detail because of the interesting problems in diagnosis and pathogenesis.

Sinus thrombophlebitis is one of the most common complications of mastoiditis. The incidence of this complication in both acute and chronic mastoiditis, as reported in several large series of cases in the literature, is about 3.5 per cent. The thrombosis may be manifest, latent or develop postoperatively. Both of our cases were of the manifest type, i.e., present at the time of operation. In one case there was definite evidence of thrombosis at the time of operation. In

the other, the diagnosis was suspected because of the clinical findings and x-ray studies, but was not confirmed until operation. In one of the cases the thrombosis was of the *retrograde* type, extending against the blood current; in the other it extended with the blood current into the internal jugular vein down as far as the subclavian vein.

The first case was that of a man forty-four years of age, who came for examination, December 9, 1935, complaining of a sore throat and earache in the right ear. His illness had begun three days previous, with sudden onset of fever, vomiting and diarrhea, sore throat and earache. Examination showed an acute bilateral follicular tonsillitis with exudate on both tonsils. The right ear drum was congested, edematous and showed a spontaneous rupture with serosanguinous exudate. There was tenderness over the mastoid and tenderness over the glands of the neck on each side. Temperature was 101.5°. Three days later he developed severe chills which lasted for four days. Following the chills he developed pain in the chest and right hip. He was placed in a hospital where he was treated by his family physician, until January 10, 1936 (about one month following the onset of his illness), when he was again seen.

During his stay in the hospital he had had continuous headache for two weeks, having a typical septic temperature the first week, ranging from normal in the morning to 102° to 103° in the late afternoon. Chills were frequent but not daily. Examination at this time showed a purulent exudate from the right ear; the drum was thickened, but not bulging. There was no mastoid tenderness, but there was tenderness over both jugulars. The patient stated that there had been some swelling in the right neck which had now receded. There was pain in the right hip, but no swelling. Ophthalmoscopic examination showed bilateral papilledema of about three diopters with small petechial hemorrhages in both retinae. White blood count was 20,000 with 86 per cent neutrophils. X-ray of the mastoids showed dense bilateral sclerosis of all cells and was of little help in diagnosis. Blood culture, after six days, was negative. Spinal puncture showed a marked increase on intracranial pressure. The fluid was not clear, with 43 cells per cu. mm. Tobey-Ayers test was positive on the right, showing occlusion of the right lateral sinus or jugular vein.

A diagnosis of subacute mastoiditis, right ear, with sinus thrombophlebitis, septicemia, and probable brain abscess was made, and on January 12, 1936, the internal jugular was exposed and ligated and the right mastoid was explored. The cortex and mastoid cells were sclerotic, the mastoid antrum was small and filled with pus and granulations. A small perisinus abscess was found on the lateral sinus near the bulb. Aspiration of the sinus with a large needle showed no blood in the sinus. The lateral sinus was widely exposed and opened. A large clot, extending down to the bulb and upward and backward beyond the knee, was removed. Free bleeding was obtained from above, but not from below.

Following the operation there was definite improvement for about one week. The fever remained normal except on two occasions when there was a rise to 100°, but no chills. Severe pain in the head returned and he became listless at times. On one occasion he complained of temporary diplopia. The papilledema showed no improvement and neurological examination showed absence of left abdominal reflex and slight ptosis of the left eyelid. A tentative diagnosis of brain abscess, right temporosphenoidal lobe, was made and exploration advised. On January 28, trephine and exploration of the right temporosphenoidal area failed to reveal any abscess. The patient failed rapidly and died about six hours following the operation. The autopsy findings were essentially negative except for a large thrombus filling completely the right lateral and sigmoid sinuses.

The interesting features in this case are:

First: The early onset of the clinical signs of sepsis suggesting an early bacteremia and probably also an early thrombophlebitis of the right sigmoid sinus. The "head" or oldest segment of the thrombus was found in the jugular bulb. Primary thrombophlebitis of the jugular bulb is rare and probably occurs directly by extension of infection through the floor of the middle ear cavity.

Second: The retrograde extension of the thrombophlebitis against the blood stream after *thrombectomy* and *ligation* of the internal jugular vein.

Third: The early and persistent increase of intracranial pressure with marked papilledema and clinical signs suggesting brain abscess.

The second case was that of a woman, forty-six years of age, who was brought to the hospital in an ambulance, on March 13, 1936. Her illness had begun one month before, with a severe "head cold," and a pain in her left ear which lasted about five days. There was no history of discharge. The earache subsided but she continued to complain of tenderness behind the left ear and in the left temporal region. For three weeks previous to admission she had had daily chills and fever, headache, nausea and vomiting. There had been pain, tenderness and conspicuous swelling of the left side of the neck for the past ten days. Examination, on March 16, 1936, revealed tenderness and diffuse swelling of the left neck extending from the mastoid to the clavicle. The left ear drum was normal. X-ray of both mastoids showed second degree involvement of the left mastoid. Ophthalmoscopic examination showed bilateral papilledema of about four diopters with a few small retinal hemorrhages. Urinalysis showed a large quantity of sugar and acetone, with some diacetic acid. Blood sugar was 236 mgms. Blood culture was negative after 48 hours' growth. Spinal fluid was essentially negative except for markedly increased pressure. Tobey-Ayer test was positive. White blood cells, 14,000.

A diagnosis of masked subacute mastoiditis, left ear, with sinus thrombophlebitis, was made, and operation advised.

On March 19, the left mastoid was opened. The cells

were necrotic and filled with purulent exudate and granulations. Lateral sinus was exposed and found filled with a large thrombus extending from the torus to the bulb of the jugular. A transverse incision, down through the superficial layer of the deep cervical fascia, revealed a large abscess of the neck, with complete necrosis of the left jugular vein. Drainage was established and a slow but steady improvement occurred. The urine became sugar-free and blood sugar returned to normal one week following the operation. The papilledema gradually subsided and on April 17, 1936 the corrected vision was 20/20 when the patient seemed fully recovered.

The interesting features of this case are:

1. The development of an advanced mastoiditis without perforation of the tympanic membrane. There was tenderness over the mastoid, but no external swelling.

2. The massive thrombophlebitis beginning in the lateral sinus and extending with the blood stream to involve the entire jugular vein.

3. Complete recovery without complication.

Discussion

DR. C. N. SPRATT (Minneapolis): In my experience lateral sinus thrombosis has not been a serious complication in mastoiditis. In the thirty years in which I did ear work, twenty-one cases of sinus involvement or approximately 7 per cent of the mastoids operated on had this complication. There were four deaths in this series. Two of these were associated with meningitis and the other two were uncomplicated. This gives a death rate, in the latter, of approximately 10 per cent. In both of these fatal cases, the condition had been unrecognized and was of long duration and the jugular veins in each case were completely occluded. Of the twenty-one cases, the jugular vein was ligated in fifteen. There are certain errors of diagnosis if one relies upon the blood culture, as it is well known that cases of pneumonia, typhoid, endocarditis, etc., may give positive cultures where there is no lateral sinus thrombosis; and on the other hand, many cases of lateral sinus thrombosis give negative blood cultures, as the thrombus may be a mural one and sterile.

DR. A. E. SMITH (Minneapolis): There was considerable sclerosis of the mastoid cells in the first case. Was there a history of ear trouble there?

DR. CAMP: No, there was no history of previous abscess.

DR. A. R. COLVIN (St. Paul): We have, at the Ancker Hospital at present, a man whom I saw twenty-seven years ago, with a condition due to sigmoid sinus thrombosis, which seems worth reporting as a discussion to Drs. Camp and Nordland's paper. When first seen by me, he was unconscious, with evidence of pyemia, i.e., suppurating knee and shoulder joints, abscess of his chest wall. He had a malodorous discharge from his right ear and although tender over the mastoid process there was neither swelling nor redness of this region; there was tenderness along the course of the internal jugular vein. On opening the vein, pus escaped and it was found that the pus was

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

BOOKS RECEIVED FOR REVIEW

A TEXTBOOK OF MEDICINE. Charles Phillips Emerson, M.D., Research Professor of Medicine, Indiana University, etc. 1,296 pages. Price, \$8.00, cloth binding. Philadelphia: J. B. Lippincott Co., 1936.

KAMA SUTRA—The Hindu Science of Love. Mallinaga Vatsyayana. Translated from the Sanskrit by Sir Richard Burton. The Doctor as Marriage Advisor, by Max Hodan, M.D. 127 pages. Suede finish binding. New York: Medical Press of New York, 1936.

SYNOPSIS OF ANO-RECTAL DISEASES. Louis J. Hirschman, M.D., F.A.C.S. Ex-Vice President A.M.A., Professor of Proctology, Wayne University, etc. 288 pages. Illus. Price, \$3.50, flexible binding. St. Louis: C. V. Mosby Co., 1936.

DISEASES OF THE CORONARY ARTERIES AND CARDIAC PAIN. Edited by Robert L. Levy, M.D. Professor of Clinical Medicine, College of Physicians and Surgeons, Columbia University, etc. 445 pages. Illus. Price, \$6.00, cloth binding. New York: The MacMillan Co., 1936.

LOBAR PNEUMONIA AND SERUM THERAPY.

Frederick T. Lord and Roderick Heffron. New York: The Commonwealth Fund, 1936.

The serum treatment of pneumonia has proved its value in reducing the mortality of Types I and II pneumonia by at least 10 per cent. It is, perhaps, too early to state the value of serum in the so-called higher types of pneumococcic pneumonia.

In New York and Massachusetts the states supply the profession with this serum for patients unable to pay the high cost, thus recognizing the importance of lobar pneumonia as a community problem and the value of serum in its treatment.

While the mortality of labor pneumonia in Minnesota is not so great as in the East, every practitioner and internist should be posted on the recent developments in the serum treatment of pneumonia. This includes typing; the contra-indication of serum therapy for those sensitive to horse dander, those who have recently had horse serum injections, those sick more than four days or moribund, or those showing a positive ophthalmic reaction; and the technic of serum injection itself.

This little gem of a book gives all this information in a nutshell and should be in the hands of every general practitioner and internist. Written by a professor of clinical medicine at the Harvard Medical School in collaboration with the Field Director of the Pneumonia Study and Service of the Massachusetts Department of Public Health, it represents clinical experience as well as intensive study of the important subject of pneumonia and its treatment.

C. B. DRAKE, M.D.

a section of the vein walled off by endophlebitis at about the middle of its course. On opening the mass, pus escaped; and on opening the sinus, pus also escaped. The knee and shoulder joints were drained of pus, as was the abscess in the chest wall. The patient recovered and is now in the hospital for other ailments.

The question of papilledema from venous obstruction, due to sinus thrombosis, was demonstrated in the case of a young woman who was suffering from severe headache and blindness, these dating back to a febrile illness of a year previously. She was operated upon by a colleague under the supposition that she had a brain tumor. At the operation, the bleeding from the bone was so profuse that death ensued. Autopsy revealed obliteration of all of the major dural sinuses, with here and there small pockets in the sinus at the entrance of the diploic veins. The thrombosis in this instance was due to infection not going on to suppuration; the blindness was evidently due to the long-continued venous obstruction.

The third case was a child of three years who was suffering from bilateral mastoid suppuration—neglected. The left mastoid cells were drained of pus and his condition improved. Shortly, however, it was necessary to drain the opposite mastoid. After this, however, his symptoms not improving, a diagnosis of sigmoid sinus phlebitis was made and of the right—last side operated. On opening this sinus, however, thrombosis was not found and it was necessary to pack it. Later he became suddenly unconscious and blind and finally a red streak appeared over the course of the internal jugular vein on the side of the first operation. The boy's condition was desperate but it was concluded that he had sinus and jugular vein thrombosis. On exposing the vein it was found to be adherent to its sheath, thus indicating at least a phlebitis. However, even if it were (because of the soft nature of the thrombus) impossible to say positively that the vein contained a thrombus, still all the other indications pointed to this and on opening the vein a clot extending from above and dichotomously extending into the subclavian vein was removed. Because of the child's precarious condition at this time the sinus was not explored through the old operative wound. However, the boy recovered. All the facial veins became dilated. This was twenty-six years ago and he is still living.

I report these cases as demonstrating the variable kinds and results of sinus thrombosis.

The meeting adjourned.

R. T. LA VAKE, M.D., *Secretary*.

Amendment of Council Decision, "Vitamin E Claims for Public Advertising"

The Council on Foods reports that there are at present no adequate scientific data establishing the role of vitamin E in human dietetics. The Council has ruled that neither the claims for vitamin E nor mention of the vitamin shall appear on food labels or in advertising addressed to the public; nor will such claims be recognized if they appear in advertising addressed to the profession if directly or inferentially such advertising recommends the use of the preparation because of its vitamin E content. (J.A.M.A., Oct. 17, 1936, p. 1303.)

PHYSIOLOGY OF LOVE. By Paolo Mantegazza. Tr. from the Italian by Herbert Alexander. New York: Eugenics Publishing Company, 1936.

The author of this book was born at Monza, in 1831. After a distinguished career as a student at Pisa and Pavia, where he graduated M.D. with honors, he spent some time in postgraduate study in the various European centers and after a period of time spent in private practice and as a military surgeon he became professor of general pathology at Pavia, founding there the first laboratory of experimental pathology in existence. In 1869, he was called to fill the chair of Anthropology in the Istituto di Studi Superiori at Florence and while engaged in this work he also was instrumental in the foundation of the National Museum of Anthropology, whose seat is at Florence, and initiated the Italian Anthropological Society, with its official organ, the Archives of Anthropology and Ethnology. In 1902, with Lombroso, he instituted the Anthropometric Laboratory, in connection with the Museum, and on the occasion of the opening of this he was extended a widely accorded expression of regard.

He was a member of the Italian Parliament from 1865 to 1876, and later given the honorary office and title of Senator. As a writer he is best known for the three volumes which compose his Love Trilogy, of which the present volume, published in 1872, was the first, to be followed by the *Hygiene of Love*, in 1874, and *Mankind in Love*, in 1885. His expressed attitude toward divorce, prostitution, birth control and similar economic problems, stated at a time when these things were not even discussed, much less tolerated, aroused much violent opposition and efforts were made to deprive him of his teaching and political connections, but without success. He died in 1910, in his seventy-ninth year, one of the most important and honored figures in Italian public life.

This book is necessarily quite different from the average medical book. It deals with a tremendously powerful emotion, but one which cannot be measured by instruments or studied from the standpoint of organic change, consequently there are no dials to read, no tables to analyze and compare and no microscopic sections to interpret. It is wholly a study of imponderables with widely differing manifestations. It is a mistake, therefore, to assume that the book is only a philosophic treatise and nothing else. Love is a function and not merely a belief or a religion. The mere fact that we have as yet been unable to find its origin in any particular part of the brain or elsewhere does not deny its existence as a very potent entity. That simply tells us that the extent of our compre-

hension is circumscribed and that once again we have reached its limits.

The subject-matter of the book is very beautifully written and the work of the translator has been exceedingly well done. There is not an objectionable line in the whole volume, so far as the main part of it is concerned. One gains the impression that the chapter headings and the interpretative subheads are the work of another hand. They are more suggestive and pointed than what follows. If anyone has bought the book on the strength of these captions he is going to be disappointed. It is anything but a pornographic guide, but one might easily so expect to find it if one relied only on the table of contents.

We believe that a book of this type, competently prepared and understandingly read, should prove itself very useful. It considers and discusses critically the various psychic processes which enter into so many of the vexed problems of marital difficulty, and brings things to a practical conclusion in its last few chapters by a wealth of useful deduction. It can be read with profit by anyone who wishes to improve his own mind or his usefulness to others.

GILBERT COTTAM.

ARTHRITIS AND RHEUMATIC DISEASE. Maurice F. Lautman, M.D. 177 pages. Illus. \$2.00. New York: Whittlesey House, 1936.

A volume written for the layman who wishes to understand the rationale of the treatment of rheumatism. For the physician it acts as a concise review of the subject of arthritis. The volume is written in language that the non-medical person can understand and is appropriately illustrated.

H. J. PRENDERGAST, M.D.

CHEMICAL PROCEDURES FOR CLINICAL LABORATORIES. Marjorie R. Mattice. 520 pages. \$6.50. Philadelphia: Lea & Febiger, 1936.

The constantly increasing importance of biochemical procedures in determining variations in physiological function of the various organs, receives recognition in this valuable handbook. Embodying the newest methods of analysis of the body fluids and tissues, it discusses their normal constituents, discusses briefly their variations during disease, and in concise fashion describes the procedures used. Not the least valuable chapters are those included in the appendix, particularly the very convenient "résumé of normal data," as well as those describing the preparation of solutions and re-agents.

Certainly this book represents an important contribution to the library of anyone interested in laboratory medicine.

THOMAS MYERS, M.D.

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THE VALUE OF ELECTROLYTE, WATER AND ACID BASE BALANCE STUDIES IN RENAL DISEASE*

GEORGE MORRIS PIERSOL, M.D.

Philadelphia, Pennsylvania

DURING the last two years, at the Abington Memorial Hospital, both the Medical and Surgical Services, as well as the Laboratories of Clinical Pathology and Bio-Chemistry, have been particularly concerned with certain aspects of renal disease. We believe that the proper interpretation of some of our studies throws additional light upon several of the controversial aspects of nephritis and furnishes us with a more rational basis for their management. The purpose of this paper is to discuss some of these observations in the light of their clinical interpretation and their probable mechanism.

In the studies herein to be considered, we wish at the outset to acknowledge the debt we owe to our associates in the laboratory who not only furnished the chemical data, but also aided in every way with their advice and suggestions. Our thanks are due especially to Dr. John Eiman and Dr. Charles G. Grosscup, who have been of invaluable help in the preparation of this report.

In this discussion we are only concerned with vascular renal disease. Whether the primary lesion involves the capillaries of the glomerular tufts or the endothelium of the afferent arterioles to the glomerulæ the ultimate effect is to disturb normal renal function. It must be stated that when the outstanding changes are in the arterioles, the vascular disturbance is by no means confined to the kidneys, but is a systemic involvement of the smaller blood vessels with possibly greater and more obtrusive damage to the renal arterioles.

Furthermore, whether we are dealing with renal disturbances that are primarily glomerular, or merely arteriolar, the important fact to determine is whether the vascular changes in the kidney are actively progressive or whether the condition is essentially stationary. If, therefore, we group together for purposes of discussion the various renal lesions that have as their underlying factor vascular changes, the important things to evaluate are the degree of activity of the pathological process and the extent of impairment of renal function. Methods for determining the functional capacity of the kidneys have varied widely from time to time and are subject to different lines of approach in various clinics. This has brought about varied interpretations of laboratory data. Whatever methods are followed, the object in view is to determine the functional capacity of the kidneys and to try to estimate their factor of safety and how great a burden they can carry.

There is no symptom-complex associated with renal insufficiency that is of more clinical importance or that has occasioned more experimental effort than the phenomena which have been called uremia. A number of clinical manifestations of totally different origin have heretofore been grouped under this general term. It is important, therefore, to agree upon what is meant by uremia. According to Volhard, there are three conditions that give rise to symptoms designated as uremia, but only those which are dependent upon renal insufficiency should be designated as true uremia; the others can be more appropriately termed extra-renal or pseudo-

*From the Medical Wards and Laboratory of Bio-Chemistry of the Abington Memorial Hospital. Read before the St. Paul Clinical Club, May 2, 1936.

uremia. Under this heading may be grouped: acute eclamptic uremia, and those cerebral circulatory phenomena associated with primary hypertension. In the first instance, the symptoms seem to be due to increased intracranial pressure due to cerebral edema. In the second, it is presumed that the manifestations are the outcome of cerebral ischemia, the result of the vaso-constriction that is held to be an active mechanism in hypertension.

Our concern is not with these types but only with true uremia, which results from renal insufficiency. Without presuming to discuss the pathogenesis of uremia, it may be stated with reasonable certainty that the clinical manifestations of true uremia are correlated in some way with retention in the blood of waste products that should have been eliminated by the kidneys. The most serious and lethal manifestation of true uremia is uremic coma and we have had the opportunity to study a number of cases that have led us to certain conclusions in regard to this important symptom. We have yet to observe a case of uremic coma without the presence of definite acidosis. This has led us to adopt the axiom, "No uremic coma without acidosis."

It would seem appropriate at this point to discuss, briefly, the mechanism by which this is brought about. It is true that most individuals with kidney insufficiency who become uremic present an elevation of the blood urea. This fact alone cannot be taken as indicative of impending coma since we have observed, along with others, many patients in whom the blood urea nitrogen reaches excessive levels, even as high as 300 mgms. but who show no evidences of coma. Attention should be called to the fact that, although most patients who have evidences of renal insufficiency that may lead to uremia show an elevation of blood urea nitrogen, there is a definite group of individuals who, even when other evidences point clearly to renal damage, such as a lack of ability to concentrate, markedly diminished phenolsulphonphthalein output and a decreased urea clearance, present a blood urea nitrogen which is only slightly elevated. When this situation arises, a study should be made to determine the functional efficiency of the liver, since numerous observations would lead us to believe that failure of the blood urea nitrogen to rise definitely in the face of other evidences

of renal dysfunction is indicative of extensive liver damage. It has been repeatedly shown that serious parenchymal liver changes interfere with the production of urea. In cases of this kind, even when the blood urea nitrogen is not elevated, a definite and considerable rise in the total non-protein nitrogen is still present. The difference between these two figures, non-protein nitrogen and blood urea nitrogen, which is normally about 15 mgms., becomes considerably greater under such circumstances.

The blood urea level in nephritis is somewhat analogous to the blood sugar level in the diabetic. The diabetic does not die of a high blood sugar, neither does the nephritic succumb to a high blood urea. The diabetic becomes comatose because of the acidosis which is due to ketosis, low total base, or both. The comatose uremic patient does not die of a high blood urea but of acidosis that results from the inability of the damaged kidney to eliminate properly inorganic phosphates and sulphates which, as a consequence, accumulate in the blood and disturb the normal acid-base ratio. It should be added here that many patients with uremic coma are encountered who have failed to take an adequate amount of food, especially carbohydrates, and, therefore, there may be and often is the super-added factor of starvation ketosis.

The determination of the CO_2 combining power of the plasma is the most valuable index of the degree of acidosis. In acidosis of renal origin, besides low CO_2 capacity, there occurs an associated elevation of the blood inorganic phosphates. The same applies to the sulphates but, unfortunately, satisfactory methods for this determination are lacking. Furthermore, the elevation of the phosphorus gives a rapid and fairly reliable index of the impending danger of coma in renal insufficiency. When low plasma CO_2 is found with a normal blood phosphorus, look for conditions other than renal as the cause of the coma.

It seems likely that the acidosis of renal origin is brought about by an increase in sulphates and phosphates and, to some extent, organic acids, in conjunction with a lowering of total base level due to electrolyte loss through the kidney, caused principally by the inability of the functionally impaired kidney to metabolize ammonia for the neutralization of acid metabolites. Since nearly

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TABLE I (CASE 1)

	1936	4/27	4/28	4/29	4/30	5/1	5/8	5/18
BLOOD CHEMISTRY:								
Urea Nitrogen		210	160	160	140	130	88	67
Creatinine		10						
Plasma Chlorides		600	530	570	538	510	520	600
Plasma CO ₂		18	33	57	48	39	59	38
Phosphorus		7.4						
Total Base		127	138					
BLOOD PRESSURE								
		110		152	140	120	134	142
		70		100	90	80	100	98
INTAKE								
Water c.c.		3,800	1,800	2,700	2,100	1,350	2,500	3,500
Sodium Lactate gms.		44.6						
NaCl gms.			4.5		5±	5±	12±	12±
NaHCO ₃ gms.				12	12	12	12	12
Glucose gms.		200	100	125				
		Intravenously						
		Incontinent						
URINE								
Amount 24 hours c.c.				1,490	2,380		2,510	1,390
NaCl 24 hours gms.				3.1	4.2		3.6	5.28
NaCl concentration				.2	.17		.14	.38
Specific Gravity		1.009			1.005			
Albumin		++++			+++			
Pus		+++			+			
Casts		0			0			
Urea Clearance								8.6
P. S. P. 2 hours							0	

all acids must be neutralized by ammonia or a fixed base before elimination by the kidneys, if the ability of the kidneys to supply the normal amount of ammonia is lessened, the burden must fall upon the fixed bases of the body fluids such as sodium and potassium. The loss of these valuable basic constituents brings about, therefore, a reduction in the total level of the base.

When the total base is lowered, dehydration occurs and both salt and water are required by such individuals. In order to illustrate the points under discussion, a patient (Case 1) who has come under our observation may be cited briefly.

Case 1.—A woman, aged thirty-seven, presented emaciation, pallor, confusion and various delusions. Her breathing was of the Kussmaul type; there was evidence of left ventricular hypertrophy and relative mitral insufficiency. She was incontinent with a scanty output. The abdomen was negative, there was no loss of voluntary motion and no abnormal reflexes were present. It is worthy of note that the systolic blood pressure was only 100, diastolic 70. The blood showed a moderate secondary anemia. The urine had a specific gravity that varied between 1.005 and 1.009; albumin was present in definite amounts along with white blood cells and casts. The blood urea nitrogen was 210; blood sugar 190; plasma chlorides 600; total base 127; the phosphorus was up to 7.4 and the plasma CO₂ down to 18. Lumbar puncture was done and the spinal

fluid was found clear and not under pressure. She was given, intravenously, 44.6 gms. sodium lactate, 200 gms. glucose and 3,800 c.c. water. The next day she was less confused. The blood chemistry was as follows: blood urea nitrogen 160; plasma chlorides 530; CO₂ 33; total base 138. She was given, intravenously, NaCl 4.5 gms., glucose 100 gms. and 1,800 c.c. water. The third day she was rational and continent. Her blood pressure was 152/100 and her urine output 1,490 c.c. The blood chemistry was as follows: blood urea nitrogen 160; chlorides 570; CO₂ 57. From the fourth day on she was given daily, by mouth, 12 gms. sodium bicarbonate and from 5 to 12 gms. of sodium chloride.

It should be noted that as her blood pressure rose from 110/70 to 152/100, there was an improvement in the urinary output. Twenty days after admission she was in excellent condition physically and mentally; her blood pressure was 142/98 and the blood chemistry as follows: blood urea nitrogen 67; chlorides 600; CO₂ 38; urea clearance 8.6 per cent; phenolsulphonphthalein 0.

When she was admitted, it was realized that because of high phosphorus and a low CO₂, she was in a state of impending coma. Since the possibility of diabetes could be excluded and there were undeniable evidences of chronic renal disease present, it was reasonable to suppose that the coma was of uremic origin.

By the use of sodium bicarbonate by mouth, but particularly, 5 per cent glucose and one-sixth molar sodium lactate solution intravenously, along with several small blood transfusions, it was possible not only to avert profound coma but to standardize gradually

this individual and to bring her blood chemistry back to approximately normal equilibrium. She was discharged markedly improved and was directed to take daily 3 gms. of sodium bicarbonate.

Since then she has been readmitted several times. On a subsequent admission, she gave a history of having stopped her sodium bicarbonate. She was semi-comatose with a low blood pressure, her urine with a specific gravity of around 1.005, containing a heavy cloud of albumin and many casts. Her blood urea nitrogen was 210; chlorides, 546; blood phosphates, 6.2, and CO_2 down to 14. On each admission, she was again given glucose and sodium lactate intravenously and within twenty-four hours, she gradually began to come out of her coma, her blood urea nitrogen came down, CO_2 rose and her phosphorus was considerably reduced.

It is interesting that in this case the impairment of renal function and subsequent uremia always went hand in hand with a marked lowering of the blood pressure. Since adequate renal function depends largely upon the maintenance of a proper blood flow through the kidneys and adequate pressure in the glomerular tufts, it is reasonable to assume that when the systemic blood pressure falls below a certain level, filtration through the glomeruli is markedly decreased. It has been shown that the pressure in the glomeruli is normally unusually high, about the same or 20 per cent less than the carotid pressure.

In connection with the question of uremia, it is appropriate to call attention to a certain group of cases that, in the past, have not infrequently been mistaken for uremia. When excessive loss of salt and water results from vomiting, diarrhea or excessive sweating, dehydration and hypochloremia result. When the plasma chlorides fall to 500, the blood urea nitrogen is invariably increased and the lower the chlorides, the higher the blood urea nitrogen. In the vomiting cases, there is also an associated elevation of the plasma CO_2 combining power. We know now that the increase of blood urea and CO_2 (the latter indicating an increase in blood bicarbonate content) are part of a complicated mechanism designed to compensate for the loss of plasma chlorides and to maintain the osmotic pressure as near normal as possible.

From a practical standpoint, these cases of hypochloremia, as has been suggested, are of importance because of the ease with which they may be confused with uremia. When a patient

with an irritable stomach or vomiting shows albumin in the urine and elevation of urea nitrogen, not infrequently a provisional diagnosis of nephritis is made. When, in such a case, in response to a widespread fallacy, salt in the diet is immediately restricted, the vomiting is promptly aggravated. As a result, the urea nitrogen will continue to rise to 100 or more and finally a state of coma may supervene. Then a diagnosis of uremia is certain to be made. Further salt restriction is apt to be instituted, accompanied by various measures such as sweats which increase dehydration. Unhappily, such an individual may lapse into coma and succumb. Had the blood chlorides been determined in such a case and had it been realized what actually occurred as the result of persistent vomiting, a proper diagnosis would have been reached. The case would have been recognized as one of hypochloremia with its associated alkalosis and azotemia. Proper salt and water therapy will promptly correct the condition, whereas the therapy commonly used only serves to make it worse. In cases of hypochloremia, unless there has been a pre-existing hypertension, the blood pressure is not elevated and may be considerably reduced. This is a differential point worthy of note.

Another important factor to be considered in the study and management of renal disease is the sodium chloride intake. Normally, there is a sodium chloride balance and the amount excreted in the urine is approximately equal to that ingested. It is of value in renal disease to know the total electrolyte concentration in the blood plasma because certain kidney cases have a tendency to store sodium chloride somewhere within the body in considerable quantities. The exact mechanism by which this is accomplished is far from being well understood.

It is a fact that many chronic renal cases have great difficulty in eliminating this stored sodium chloride. As a result, the plasma chlorides may rise to above 600. When this happens and the urea nitrogen is also elevated, serious alterations in osmotic pressure of the plasma occur. It is, therefore, of definite practical importance to bring the sodium chloride level down to normal limits in chronic renal cases even when the retention of sodium chlorides is not associated with edema. It has been found that many damaged kidneys cannot concentrate salt in the urine above 0.4 per cent, whereas the normal kidney

will concentrate up to 1.8 per cent or even 2 per cent. In view of this, it is advisable to limit the daily intake of sodium chloride in accordance with the amount that can be readily eliminated in order that the plasma chloride level will not be too high. The best way to determine this "salt tolerance" is to carry out salt balance studies over a period of several days. An effort should be made to see that the plasma chlorides remain somewhere around 550. A series of studies have shown that, in the average case, approximately 2.5 gms. of salt per day is a satisfactory maintenance dose.

In this connection, it should be recalled that the minimum requirement for a normal adult is only about 1.8 gms. per day, whereas the ordinary hospital "house diet" contains approximately 10 gms. This aspect of the subject is well illustrated by a case of chronic arteriolar nephrosclerosis which we had an opportunity to study over a long period of time. In this individual, the highest concentration of chlorides obtained in the urine was 0.4 per cent at a time when the plasma chlorides averaged 630 or more. It required fourteen days to eliminate the excess chlorides. This patient has since been maintained at a suitable level on 2.5 gms. per day.

Closely associated with the question of the sodium chloride balance is the problem of the restoration and maintenance of nephritics in a nearly normal water balance. Many nephritics are seen who are in a state of dehydration. However, there are many others in whom the opposite situation exists, namely, excessive water retention and edema. Both situations call for a careful consideration not only of the electrolyte level and water balance but also of the plasma protein concentration.

It is true that increased electrolytes, notably sodium chloride, are an important factor in holding water in the tissues and bringing about edema. On the other hand, it is useless to try to correct the electrolyte level without knowing whether the plasma proteins are above the edema level. If the total plasma proteins are below 5.3 per cent, the colloidal osmotic pressure is so altered that the retention of fluid in the interstitial tissue spaces results in edema. Under conditions of low plasma proteins, if water is forced with or without electrolytes, edema will occur. Therefore, in cases of this kind, either the plasma

protein level must be raised by the increased ingestion of proteins or more effectively by transfusion, or the colloidal osmotic pressure must be restored temporarily by the injection of acacia solution.

Not only is it important to determine the amount of total plasma proteins present, but it is also of value to recognize any inversion of the normal serum albumin-serum globulin ratio. In view of the fact that the globulin molecule is larger than the albumin molecule, the effective osmotic pressure per unit mass of the former is less, which makes for the development of edema. When the plasma protein level is normal, or has been restored to normal, then the level of the solutes should also be regulated.

When these steps have been accomplished, water should be given to nephritics as freely as possible without embarrassing the circulation. This latter point should be given careful consideration in deciding upon the amount of water to give a nephritic. In nephritics, especially the chronic ones with hypertension, it is essential to maintain the integrity of the myocardium. The ingestion of excessive amounts of fluid, especially if administered rapidly, may raise the blood volume to the point of throwing an overload on a weakened heart muscle, which may have disastrous results. On the other hand, since it is of fundamental importance to eliminate as much of the metabolites as possible through the damaged kidneys and, thereby, prevent their accumulation, the maximum amount of water should be administered. It is unnecessary to draw attention to the well known fact that special care must be exercised in the giving of sodium chloride and water when edema or effusion exist.

Some of these problems are illustrated in the following patient:

Case 2.—A laborer, aged forty-eight, has been under observation for the past two years suffering from a definite chronic arteriolar nephrosclerosis of long standing. The condition was non-progressive and he was symptom-free for years. On admission, he presented unmistakable evidence of chronic arteriolar nephritis and prostate hypertrophy with an associated cystitis and obstruction. Within a few days he became drowsy. At this time, his blood urea nitrogen was 276, his chlorides 490. His blood plasma, CO_2 , had dropped to 29, and the phosphorus had risen to 8.2. His urea clearance was 8 per cent, and P.S.P. output, 0. For the next few days, he had occasional vomiting and his drowsiness persisted. He had retention of urine which

RENAL DISEASE—PIERSOL

TABLE II (CASE 2)

	1934								1935			
	10/30	11/1	11/7	11/16	11/26	11/27	12/1	12/11	1/20	2/20	4/4	11/22
BLOOD CHEMISTRY												
Urea Nitrogen	222	276	245	90	61	60	63	52	50	57	37	40
Creatinine			4.4				3.6					2.8
Sugar	125		109	85	73	79		90	92	82		
Plasma Chlorides	488	490	530	598	650	660	660	580	578	580	600	586
Plasma CO ₂	35	29	46	49	37	44	51	47	51	52	46	50
Phosphorus	4.8	8.2	6.2	2.8	3.6	4	4	4	3.8	4.1	3.2	2.1
Plasma Proteins %				6.0				6.0				
URINE												
Amount 24 hrs. c.c.	1,200	1,550	2,200	3,400	4,100	4,100	4,500	2,950	1,790	1,970		1,155
NaCl 24 hrs. gm.						15.4	14.8	6.7	5.0	3.6		1.8
NaCl Concentration %						.37	.33	.22	.27	.18		.16
Specific Gravity	1.006	1.009	1.008	1.007	1.004		1.006	1.004				
Albumin	++	++	++	++	++							
RBC's	0	0	0	0	0							
Pus	+++	+++	+	++	±							
Casts	0	0	0	0	0			17	15			23
Urea Clearance %		8		4								6.4
P.S.P. % 2 hrs.		0		0								
INTAKE												
NaCl gms.	10±	10±	10±	10±	10±	2.5	2.5	2.5	2.5	2.5+	2.5+	2.5
NHCO ₃ gms.	0	4	4	4	0	1	1	1	1	1±	1±	1±
		Start		last day		start						
Blood Pressure												
	116		110	118	120	120	116	104				
	68		60	82	84	80	68	60				
REMARKS												
		Tranfusion							Prostatic Resection	Returned to work	Working	

required a gradual decompression. His blood urea nitrogen continued above 200 and his blood phosphorus remained high, between 7.8 and 6.2, until the decompression was completed. As his blood urea nitrogen came down to 90, his plasma CO₂ went up to 49, and the phosphorus dropped to 2.8, his drowsiness disappeared.

Shortly after admission, when his chlorides were low (488), he was placed on a house diet averaging 10 gms. of sodium chloride per day. On this intake, his plasma chlorides gradually rose until about one month after admission they reached 660. He was then placed on daily sodium chloride intake of 2.5 gms. Notwithstanding this low intake, it took about fourteen days to reduce his plasma chlorides to 580.

In order to combat the tendency to acidosis, he was given daily by mouth, from 1 to 4 gms. of sodium bicarbonate.

When he was discharged, he was taking daily, 1 gm. sodium bicarbonate, a low salt diet with moderate restriction of protein intake and forced fluids in view of the fact that he had no edema and showed no signs of circulatory embarrassment.

A month later his condition was sufficiently improved to warrant a transurethral resection of the prostate under local anesthesia. His recovery was prompt and on his discharge, a few weeks later, the patient was voiding without trouble and his blood urea nitrogen was 57; plasma chlorides, 580; CO₂, 52; phosphorus, 4.1; urea clearance, 15.

Subsequent reports covering a period of about eighteen months indicate that his general condition continues to be satisfactory and he is able to continue active physical work. His laboratory findings recently were as follows: blood urea nitrogen, 40; creatinine, 2.8; plasma chlorides, 586, CO₂, 50; phosphorus, 2.1; urea clearance, 23, and P. S. P., 6.4.

This case illustrates the important fact that, in spite of his chronic nephropathy, he remained in good condition for years until the superadded urinary tract obstruction, with infection, occurred. This, as so often happens, precipitated the uremic coma which was impending as indi-

cated by his drowsiness, the high blood phosphorus and the falling plasma CO_2 . By careful regulation of his sodium chloride, water and protein intake, and combating his acidosis and at the same time relieving at first temporarily and later permanently, the urethral obstruction, it was possible, gradually, to improve his kidney function to the point where he was a reasonable operative risk and, furthermore, to get him in such condition that he was able to return to useful occupation. It is such a case as this that shows what may be done along the lines of standardizing nephritics provided the nephritic is one in whom the process is not progressive, and the initial inflammatory lesion has become arrested.

A different type of case is presented by the following:

Case 3.—A young woman, aged thirty-two, was admitted to the hospital with a diagnosis of acute proliferative arteriolar nephropathy with beginning hypertension. Her physical examination, urinary findings, blood chemistry and renal function studies amply confirmed this diagnosis. Her eye grounds showed angiosclerosis of the retinal vessels. Her tonsils were found to be diseased and cultures from the tonsils and stools showed streptococcus viridans and hemolytic streptococci. As the only demonstrable focus of infection that could be found was her tonsils, these were removed in the hope that, in this way, her renal condition could be improved and the process checked. This, unfortunately, failed to be the case, as during her stay in the hospital her urinary findings did not improve. On the contrary, evidence of progressive renal insufficiency occurred.

Unlike the patients previously referred to, it was impossible to standardize this patient because the vascular lesions of the kidneys were progressive even when a focus of infection was removed. She developed a severe toxic purpura and died from cerebral and pulmonary edema.

Here is an instance of an individual in whom, evidently, the fundamental cause for her malignant proliferative nephro-arteriolitis was a streptococcus infection which brought about progressive uncontrollable renal changes.

In the case of this woman, the terminal nervous phenomena were not the result of true uremia—no stupor or coma and no acidosis. On the other hand, the disturbances of her blood chemistry, increase of solute concentration, evidently induced an increase in osmotic pressure of the body fluids that led to the development of cerebral and pulmonary edema. The mechanism

by which such changes occur is certainly not well understood and is not properly a part of such a discussion as this.

From a practical standpoint, the various studies we have carried out have led us to believe that, discouraging as the management of the chronic vascular renal case may be, the situation is by no means hopeless in certain selected instances.

In cases of impending coma, besides regulating water and electrolyte balance, the important problem is the proper administration of alkali. If the plasma CO_2 is 20 or under, sodium lactate in $\frac{1}{2}$ molar solution, administered intravenously, is the alkali of choice (60 c.c. of $\frac{1}{2}$ M. solution per kil. of body weight will raise the plasma CO_2 combining power 30 volumes per cent). In cases in which the CO_2 is above 20 and the patient is able to take liquids by mouth, the administration of sodium bicarbonate by that route will often suffice (0.78 gms. per kil. of body weight will raise the CO_2 combining power 30 volumes per cent). If such treatment is promptly instituted, it will not infrequently be possible to relieve or prevent uremic coma. The individuals who are suspected of suffering from the so-called wet brain should be given the benefit of a lumbar puncture, since the relief of the spinal pressure will often bring about considerable improvement, especially if it is repeated sufficiently often. In all instances, where patients have been on inadequate diets and are unconscious or vomiting, in order to combat and prevent starvation acidosis, an ample supply of glucose should be administered in a 5 per cent solution.

The cases that fall in the category of the man with chronic nephrosclerosis offer an excellent opportunity for standardization, if careful and sufficiently prolonged studies are carried out. In the standardization of such a nephritic, a procedure should be followed not unlike that in vogue for the standardization of the diabetic. The sodium chloride intake and output must be carefully observed. The safe daily requirements of salt can be determined with considerable accuracy. The same thing must apply to the administration of a base, such as sodium bicarbonate or lactate, if the necessity for it exists. Protein intake is of great importance. The error is frequently made of restricting the nephritic too much in protein intake, thereby bringing about

a negative nitrogen balance. Excessively low protein diets, 28 to 40 gms., may be justified for short periods of time. Most patients should receive close to one gram of protein per kilo of body weight, and the ordinary adult requires not less than 60 gms. per day. When the sodium chloride, protein and base requirements have been properly determined and there is no noteworthy edema, the water intake should be the maximum the patient can take without causing circulatory embarrassment.

Our conclusions may be briefly summarized as follows:

1. No true uremic coma without acidosis.
2. There is no relationship between uremic coma and the height of the blood urea.
3. In acidosis of renal origin, there is decrease in the plasma CO₂ combining power plus increase in inorganic phosphates and sulphates of the blood. There may be associated reduction of total base and "starvation ketosis."
4. When systemic blood pressure in a chronic nephritic falls to a level below the effective glomerular filtration pressure, renal function will be markedly impaired and uremic coma may result.
5. Cases of hypochloremia with high blood urea often are mistaken for true uremia. The hyperazotemia and increased plasma CO₂ are part of a compensatory mechanism for the maintenance of osmotic pressure of body fluids. Un-

less hypertension pre-exists, these cases will show no elevation of blood pressure; on the contrary, there is often a lowered blood pressure.

6. Chronically diseased kidneys eliminate sodium chloride only in low concentration. Even when no edema is present, it is important to regulate sodium chloride intake so as to preserve a normal electrolyte level in order to maintain a normal osmotic pressure.

7. Water intake in a nephritic must be regulated in accordance with the electrolyte level, the quantity of total plasma proteins present, and the efficiency of the myocardium. The maximum amount possible under the existing conditions should be given.

8. The chronic vascular nephritic, in whom the condition is no longer progressive, may live in reasonable comfort if properly standardized and maintained in water, sodium chloride, alkali, and protein balances. In the more acute progressive cases, this cannot be done successfully.

In the foregoing, an effort has been made to collect and to systematize some observations on the study and management of the vascular forms of chronic renal disease. This has been done in the belief that certain definite facts have been demonstrated and conclusions reached which may prove an aid to the clinician at the bedside in the more successful management of this group of nephropathies.

HISTOLOGY OF THE PINEAL GLAND AND ITS PROBABLE PHYSIOLOGIC FUNCTION*

ADOLPH M. HANSON, M.D.

Faribault, Minnesota

IT is with grateful acknowledgment of Dr. Percival Bailey's gracious permission that I am privileged to present the accompanying illustrations of the cellular structure of the pineal body as first studied and brought out by Hortege.†

The pineal gland received its name in 1644 from Thomas Willis (1621-1675) in much the same

manner as it received a former name, "conarium" ("Pineus" means "pine cone").

In Thomas Gibson's "Anatomy of human bodies epitomized" (1682), it is stated: "The glandula pinealis, or penis, because it representeth the pine-nut of a man's yard. It is seated in the beginning of that pipe by which the third and fourth ventricles are united." How appropriately it has been named "the penis of the brain" is now becoming apparent. According to Galen (131-201, A. D.), it is a secreting gland.

This small gland, that median eye of our

*Read before the meeting of the Southern Minnesota Medical Association, Albert Lea, Minnesota, August 31, 1936.

†The illustrations were secured by photostatic copies of Bailey's original article through the cooperation and courtesy of Dr. Oliver Kamm and Parke, Davis and Company.

arachnoid ancestors, from being the lone all-seeing eye of the past seems to be the hidden, back-seat driver of human destinies, the nigger in the woodpile of human affairs and conduct, that in some way, for good or for evil, may in-

tiles they appear one before the other. In some classes of vertebrates the position and innervation indicate that it is the anterior or sometimes the posterior organ which is present. The anterior body projects its nerve fibres into the

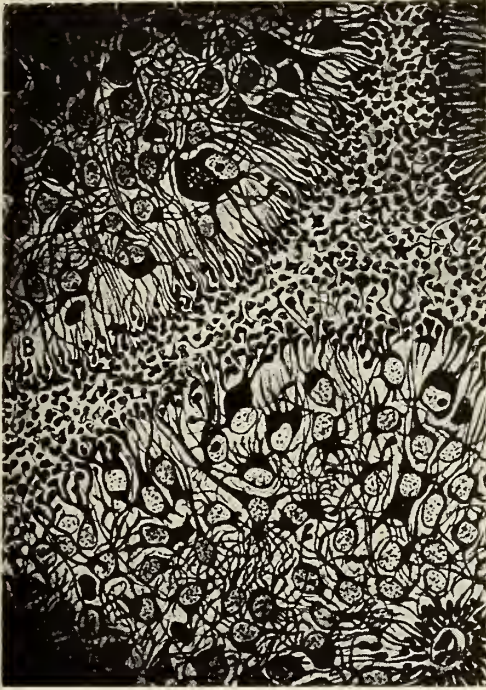


Fig. 1. Parenchymal cells of the human epiphysis, impregnated by a specific method. Some cells are much more heavily impregnated than others. A, parenchymal cells; B, tuberos marginal extremities; C (just below the letter B, in the middle zone of the section), interlobar space filled with end bulbs; D (extreme lower right), vessel surrounded by end bulbs (after Hortega).

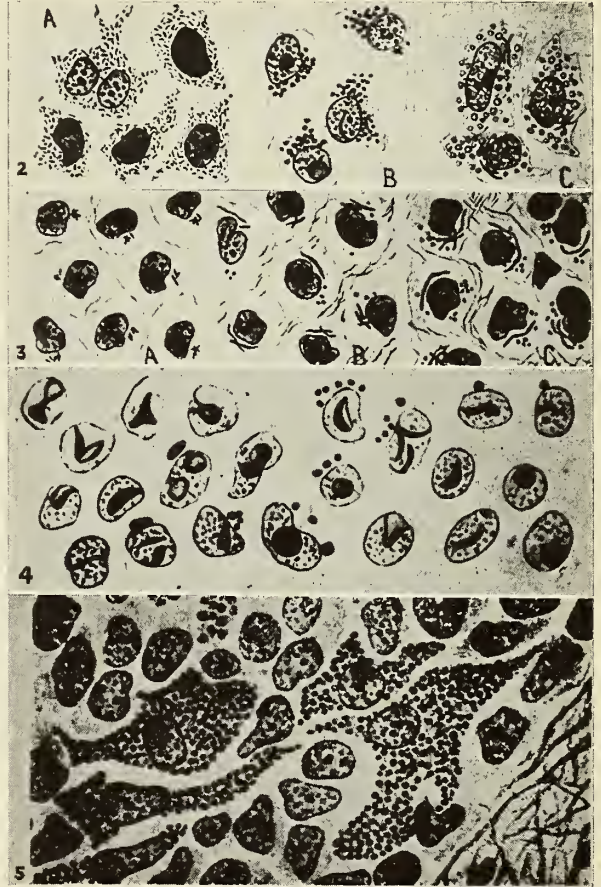


Fig. 2. Granular structure of the parenchymal cells of the human epiphysis. A, mitochondria; B, pigment; C, lipoidal granules (after Hortega).

Fig. 3. Blepharoplasts in the human epiphysis. A, of the child; B, of the adult; C, of the aged. Tannic-silver method (after Hortega).

Fig. 4. Aspects of the nuclei deformed by folding and protoplasmic inclusions. Tannic-silver method (after Hortega).

Fig. 5. Granular neuroglial cells in the human epiphysis. Silver-carbonate method (after Hortega).

fluence the acts of the ego in the flesh more than any other one gland. It was laid down with the foundations of the face and, therefore, was most likely the very first tissue, or one of the first tissues, to take on the function of internal secretion. It arises behind the superior commissure from the posterior surface of the interbrain as a small tube. In cyclostomes, many fishes and reptiles, it extends through the cranium to the skin on the dorsal surface of the head, resembles the eye in structure, and seems to function as an organ for perception of light. For this reason it has been called the median or pineal eye. Special light-percipient cells have been found in the forebrain and throughout the spinal cord in the *Amphioxus* and in ganglia of certain worms. The pineal eyes originally seem to be paired as in adult cyclostomes, and in some rep-

nucleus habenulae, while those from the posterior go to the posterior commissure and the tectum opticum. It is said that even the degenerated organs in vertebrates, in cyclostomes, some reptiles and fishes, are still capable of some perception of light. The structure is much simpler than that of the retina, but in some, rods and cones have been found. As evolution progresses one or the other of the two pineal eyes disappears, so that, while the organ was originally paired, one only remains. The blepharoplasten,

found in the parenchymal cells of the bovine and human pineal bodies, suggest the primitive blepharoplast, a minute mass of chromatin formed from the nucleus in certain protozoa, or forming the base of a flagellum acting as the center for the movement of the organism. Because phylogenetic study has revealed the pineal as the primitive eye, many have scoffed at the idea that it could in any wise carry on the function of internal secretion. Here again we find that it may even be worldly wise to "hope all things; believe all things; try all things and retain that which is good."

The pineal body in the human being seems fully developed some time in the first year of life. Early in life the pineal gland contains a variety of cells. The blood vessels invade the gland at about the fourth month of fetal life and septa begin to grow into it and are well marked at eight or nine years of age. This lobulation of the gland may or may not become complete in the adult.

Bailey stated: "In the human pineal body, aside from the ependymal cells lining the recessus and cavum pinale and the connective tissue, there are found only two cellular types, the pineal parenchyma and the neuroglia. True nerve cells have possibly been identified in a few rare instances." From this statement it will be understood that the pineal gland—that is, that structure contained within its capsule, contains two distinct types of cells and two only.

I base my statements concerning what seem to me the principal considerations from the histologic viewpoint, on Bailey's scholarly discussion of the subject in which he, in turn, gave due credit to Achúcarro and Sacristán, Walter, Josephy and del Rio Hortega. It is because of the work of del Rio Hortega, in 1922, and his special method of impregnation, that the structure of the pineal parenchymal cell was finally demonstrated. All of the cells have tubular processes that terminate in end-bulbs near connective tissue and surrounding blood vessels (Fig. 1). The pigments in the cells are intensely argentophilic (Fig. 2, A and B). Spherules giving a lipoidal reaction are found; they are illustrated in Figure 2 C. In addition to the argentophilic granules and lipoidal spherules, each cell contains one or more rods in a group near the nucleus that take the stain of blepharoplasten, such as

is seen in ependymal cells (Fig. 3). There is also a Golgi apparatus. A similar structure is seen in nerve cells in the cerebral cortex and posterior columns of the cord. These cells have a short axone that breaks up into very numerous branches but does not emerge from the grey matter and its seeming purpose is that of bringing neighboring cells into relation with one another.

The neuroglial cells resemble those of the brain in many respects. A few gliosomes are found in these cells.

Hortega identified granules, stained by Achúcarro's method, that he believed to be secretory granules. Nagéotte believe that gliosomes were, also, secretory granules.

The nucleus is supposed to play a part in secretion and such nuclei have been found to have a fold in their membranes. Some may be artefacts, while others are attributable to definite protoplasmic inclusions. Such nuclei are found in the parenchymal cells of the pineal (Fig. 4). The secretory granules of the parenchymal cell are probably blepharoplasten. The granules in the neuroglial cells, as brought out by the silver-chromate method, are presented in Figure 5.

At the time when Bailey wrote his article, in 1932, in which he briefly summarized the consensus of the best opinion concerning the function of the pineal body, he ended with this sentence: "It is probable that the pineal body of man is a rudimentary structure without function." From what was said in the article it will be sensed that the best minds, still in a lingering fashion, thought that it was perhaps probable that this little gland might be of some significance. However, I doubt if they thought that it might be the nigger in the woodpile of human affairs and conduct and, perhaps, the back-seat driver of human destinies.

René Descartes, the father of the postulate, "I think, therefore I am" (*cogito ergo sum*), and one of the world's greatest contributors to philosophy, physical science and mathematics, even though he died in 1650, thought the pineal body to be the seat of the soul. It now seems that it may influence the acts of that fundamental ego that is back of human personality more than any other one gland.

Early in 1927 the writer prepared twenty-seven beef and four sheep pineal extracts. Only one revealed a slight depressor effect. Dr. Leon-

ard G. Rowntree and his coworkers, using pineal extract (Hanson)* intraperitoneally, produced dwarfism and excessive sexual excitation and development in succeeding generations of white rats of the Wistar strain.

The really notable observation in this histologic study of the pineal gland, as revealed by del Rio Hortega, is the individual glandular character of each parenchymal cell with its tubular process and end-bulb. Allowing one's imagination to travel backward instead of forward, it is not difficult to visualize the earliest attempts of nature at secretion of any kind. Is it not likely that the first attempt was some simple cell like the parenchymal cell of the pineal?

*A solution of a picrate precipitate from an acid extraction of bovine pineal glands from beef of average killing age. The pineal extract used in the study referred to was given to The Philadelphia Institute for Medical Research by the Hanson Research Laboratory under a grant from The Josiah Macy, Jr., Foundation of New York City.

This thought leads me to the hypothesis that the pineal parenchymal cell is the most primitive cell of internal secretion in Man. The seeming function of pineal gland is a retarding or limiting effect in growth control and a primary sexual stimulation.

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PRINCIPLES IN THE MEDICAL TREATMENT OF HEAD INJURIES*

B. L. GIFFORD, M.D.

Long Prairie, Minnesota

IN reference to the title, allow me to say that this paper will briefly cover the subject of the medical treatment of head injuries. The surgical management is not within its scope, and will be left to those better informed on this subject than myself.

However, this non-surgical group includes the great majority of cases of head injury. Because of the very efficient physiological methods at hand to reduce intracranial pressure, surgical decompression to control intracranial pressure is practiced only as a measure of last resort, and then only too often ends fatally by adding insult to the already traumatized brain. The patient may recover in spite of, but rarely because of, the decompression operation.

Please note that the above statement applies to the control of intracranial pressure and does not mean to include those cases of head injury with large depressed bone fragments, or the rapidly progressing subdural hemorrhages which are obvious surgical emergencies. Yet Dr. Temple Fay of Philadelphia, reporting on a group of 300 cases of severe head injuries, opened the skull in

only fifteen cases, or 5 per cent. His mortality for the entire 300 cases was 18 per cent, but his mortality for the fifteen surgical cases was 80 per cent.

Simple depressed fractures or slight depressions of the inner table are not operative indications in themselves. They may be repaired at a later date for cosmetic reasons or in attempt to relieve persistent focal symptoms. The elevation of these small depressions of the skull will most likely not relieve the focal symptoms because these symptoms are generally due to contusion of the underlying brain itself.

The small linear fractures of the bony skull and often some of the large ones are in themselves of very little significance. In fact, the area of greatest damage to the brain may often be contra-coup in relation to the fracture as demonstrated by x-ray.

So, then, in the great majority of head injuries we are dealing with increased intracranial pressure due to edema or slow hemorrhage. These are the factors that must be combated by medical means along physiological principles if we are to aid in the recovery of our patient. Let me repeat, it is edema and slow hemorrhage that we

*Read before the Upper Mississippi Medical Society, Cass Lake, Minnesota, August 1, 1936.

must combat. In increased intracranial pressure we have three volumes to deal with. From left to right on the diagrammatic chart they are circulating arterial and venous blood, brain tissue itself, and the cerebrospinal fluid. All three are contained in a non-elastic chamber—the bony skull.

As the brain expands due to traumatic edema, the pressure within the skull is increased. This increased pressure is transmitted directly and immediately to the other volumes. Increased pressure is brought to bear on the volume normally occupied by the circulating arterial and venous blood. As a result, capillaries, veins, and the smaller arterioles are collapsed. So, then, in the end we are dealing with oxygen and nutritional starvation to the brain tissue due to lack of circulating blood.

The same pressure effect on the blood volume is produced by a subdural clot or hemorrhage into the subarachnoid, the volume space occupied by the cerebro-spinal fluid. It may seem hard to understand how any bleeding can take place in a closed non-elastic cavity filled with incompressible fluids. But we must remember that there is a difference in the pressure between the smallest arterioles and their accompanying veins. As a result venous sinuses are collapsed as hemorrhage causes increased intracranial pressure.

Brain cells are very sensitive cells. A few hours without proper oxygen or nutrition will cause their destruction, and they will never be regenerated again. That is why head injuries are a real emergency and demand the most prompt and thorough treatment. No physician should be content to simply place his patient in bed with an ice cap to the head and wait expectantly for nature to come to the rescue.

The application of the well filled, convex ice bag to the equally convex skull with an area of contact of but a few square inches should only be considered as therapy for the patient's anxious relatives. Very likely an ice collar about the neck to cool the blood in the carotid vessels would be more effective to the patient.

We can do very little to control the hemorrhage or the edema. But we can very definitely make room for the all-important space occupied by the circulating blood volume by changing the volume occupied by the cerebro-spinal fluid.

This may be accomplished by spinal drainage, the injection of hypertonic solutions intravenously,

ly, and by general dehydration. The principle of lowering the volume of cerebral spinal fluid by spinal puncture is obvious. The action of intravenous hypertonic solutions in lowering the volume of cerebro-spinal fluid is according to the

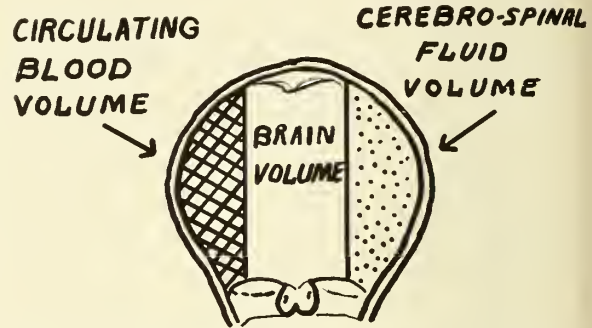


Fig. 1. A schematic diagram of the three important volume spaces within the skull.

principle of osmosis. We know that the spinal fluid is formed by the vascular fringes known as the choroid plexuses, located in all the ventricles. It is formed from blood plasma by a process of filtration through a membrane of characteristic permeability. The direction of flow is from the lateral ventricles through the foramina of Monroe into the third ventricle, then through the aqueduct of Sylvius and out through the foramina of Luschka and Magendie into the subarachnoid spaces. The volume is 100 to 150 c.c. The normal pressure varies between 60 and 120 mm. of water. With free drainage it may be formed at the rate of a liter a day.

Normally there is only 5 grams of glucose in the blood stream. By injecting 50 c.c. of a 50 per cent solution of glucose we put 25 more grams of glucose into the blood and so raise its osmotic pressure that the rate of formation of cerebral spinal fluid is greatly diminished. In fact, Weed has shown, by dye fixation tests, that by the use of hypertonic solutions intravenously the direction of flow of cerebro-spinal fluid can even be reversed, and the fluid will be reabsorbed by the choroid plexuses.

But we must remember that the use of hypertonic solutions is not a true dehydration. The cerebro-spinal fluid is only drawn back into the blood stream. No fluid has been lost from the body. The effect of this 25 grams of glucose, though very rapid, will only last about four hours and then must be repeated.

However, in the meantime we can establish

true general dehydration by limiting fluids, and by the use of saline cathartics given either by mouth, or as retention enemas. This is a slower process but absolutely permanent as long as dehydration is maintained. It is so effective in the control of the volume of cerebro-spinal fluid, that in a patient whose fluids have been limited to 600 c.c. per twenty-four hours for a few days, no spinal fluid can be obtained by dorsal spinal puncture with the patient in the reclining position.

Now you may ask, "Why go to all the trouble of intravenous solutions and dehydration when the same thing may be rapidly accomplished by repeated spinal punctures?"

It is believed that osmosis and dehydration simulate nature's way of controlling cerebro-spinal fluid volume, and that the more abrupt repeated spinal punctures add insult to the already traumatized brain.

Let me interrupt at this point to give one brief case history to illustrate the importance of dehydration therapy in brain injuries.

A large, robust, German farmer, aged thirty-five, was brought to our hospital with a severe head injury suffered when the tractor he was riding tipped over backward on him. He was unconscious for two days. After the initial period of shock was combated, he improved rapidly under intravenous glucose and dehydration therapy. He had been conscious and perfectly rational for six days with no focal symptoms of sensory or motor disturbance. There was no skull fracture visible on x-ray. On the seventh day he developed a persistent vomiting. We were afraid that he perhaps was losing too much fluid with this vomiting on top of his dehydration régime. So with this error in judgment, he was given 1,000 c.c. of physiological saline by hypodermoclysis. Within a few minutes after completion of hypodermoclysis he went into a Jacksonian type of convulsion starting in his right hand and spreading all over his body with such violent contractions that it took four people to hold him in bed. Prompt intravenous glucose and subsequent general dehydration stopped his convulsions, and he lived to complete recovery. I believe this man had a subdural hematoma over the right motor area. This hematoma did not exert pressure as long as the volume of cerebral spinal fluid was controlled, and intracranial pressure reduced. But I believe I could have brought on his convulsions at any time by simply increasing his fluid intake.

To return to the subject of spinal punctures. Although they should not be used repeatedly to control cerebral pressure, they have a very definite place in the treatment of head injuries. As an aid in diagnosis, blood found in the spinal

fluid is a certain indication that there is a laceration or lesser bleeding point communicating with the subarachnoid spaces. Do not worry much about confusing blood present in the cerebro-spinal fluid with that due to trauma from the spinal needle itself. The latter will only be present in the first few c.c. and then will rapidly diminish. But if the blood is coming from higher up, it will be uniformly mixed with the spinal fluid, with just as much blood in the last portion withdrawn as the first.

If some time has passed before spinal puncture is done, the blood cells may be partly crenated and resemble leukocytes in a microscopic examination. In that case it will be wise to do a benzidine test for blood on this specimen to help differentiate from a beginning meningitis. If a bloody spinal fluid is found, then a daily spinal puncture is indicated, not to control the volume of cerebral spinal fluid, but to remove the blood cells. The blood cells themselves are believed to be irritating to the cortex, thus producing more edema. Blood cells are also believed to be a mechanical obstruction to the absorption of cerebro-spinal fluid through the walls of the venous sinuses. These cells will not disappear in a short time if left alone, but will remain suspended in the cerebro-spinal fluid for many days. To remove them, a daily spinal puncture should be done, draining out all the spinal fluid that can be obtained with the patient in the reclining position. This may amount to from 30 to 100 c.c. per puncture, and will average 45 to 65 c.c.

We must not forget, however, that the absence of blood in the cerebro-spinal fluid does not necessarily mean that there is no cerebral hemorrhage present. To obtain blood by spinal puncture, the bleeding must be in the subarachnoid spaces. We may have enormous hemorrhage and clots subdurally and epidurally within the skull, without blood in the cerebro-spinal fluid.

If the patient is seen within a short time after receiving a severe head injury, he will invariably be in some degree of shock. This will be the usual picture of shock with rapid, shallow respirations, low diastolic blood pressure, a rapid pulse, cold extremities, and a subnormal temperature. It would seem that the "nervous theory" of shock would be the one most applicable to cases of head injury. According to this theory, shock is caused by an exhaustion or inhibition of the vasomotor mechanism. There is consider-

able evidence to prove that the nuclei for this mechanism are located in the floor of the fourth ventricle. Loss of vasomotor tone causes dilatation of all small vessels throughout the body, especially those of the splanchnic circulation. When the capillaries are dilated they hold many times their normal volume of blood, and some of the plasma leaks out into the tissue spaces, actually reducing the volume of circulating blood. As a result the pressure of the general circulation is lowered, as may be seen by the low diastolic blood pressure readings of shock. This lowered blood pressure is very detrimental to cases of head injury because it further embarrasses that all-important blood volume that we are trying to maintain in the skull.

To combat this factor we give surgical pituitrin in 1 c.c. doses to constrict the capillaries. Atropine sulphate 1/100 gr. is given for the same reason and also to prevent sweating and so reduce body heat loss. The 50 c.c. of 50 per cent glucose mentioned before given intravenously is also of great value in shock, as by osmosis it draws the blood plasma back from the tissue spaces, thus building up the volume of the circulating blood. This action is in addition to its important effect on the cerebro-spinal fluid volume.

Let me apologize for the rambling form of the first part of this paper. I have tried to explain the mechanical factors present in head injuries, the abnormal conditions of the important three volumes within the skull, and the principles of their control by medical means. In the paragraphs that follow I will try to organize these principles into their proper sequence.

The treatment is best divided into stages.

The *first stage* is that of shock. This may last only a few hours, but generally persists for twelve hours. The patient should be put to bed. Pituitrin surgical (1 c.c.) should be administered with atropine 1/100 gr. to close the capillary network and elevate the diastolic blood pressure. Fifty c.c. of a 50 per cent solution of glucose should be given intravenously to regain the blood plasma lost to the tissues, and to begin the reduction of cerebro-spinal fluid volume. The pituitrin, atropine, and glucose may be repeated every four hours during shock. The body temperature should be maintained by blankets and hot water bottles. Caffeine sodium benzoate and adrenalin may be used if the shock seems severe enough to portend death by vasomotor collapse. Spinal

puncture should be performed to determine whether or not there is blood in the cerebro-spinal fluid. If blood is present, all the spinal fluid that can be obtained with the patient in the reclining position should be withdrawn. This procedure may be repeated daily as long as the fluid remains blood tinged. The average amount withdrawn will be 45 to 65 c.c. A pressure reading at this time with a spinal manometer will be of value, remembering that the normal cerebro-spinal fluid pressure varies between 60 and 120 m.m. of water. If a spinal manometer is not available, a flow of about 1 drop per second through an 18-gauge needle will indicate a normal pressure.

If there is bleeding from the middle ear or nose these organs should be packed with gauze soaked in 5 per cent mercurochrome. In such cases, urotropin may be given in 20 grain doses three times daily to help prevent a meningitis, but there is no evidence to prove that it will actually do so.

As shock lessens the patient will very often be irrational and violent. Sedatives, such as 15 grains of chloral hydrate with 30 grains of sodium bromide, or two nembutal capsules will be of great value and must be repeated often enough to keep the patient quiet. Morphine in the shock stage is most likely contraindicated because of its depressant action on the already shocked vital centers, particularly that of respiration.

During shock, certain procedures are contraindicated. Do not move the patient about to take x-rays. Do not operate in shock. Do not start general body dehydration in this stage. Do not give quantities of intravenous saline to combat this type of shock, or the patient may recover from his shock just in time to succumb to the cerebral edema made possible by this fluid.

The *second stage*, following shock, is that of edema and hemorrhage. This period generally exists for about two to five days. It is some twelve hours after injury that the edema and slow hemorrhage begin to show their effect on the vital centers. The symptoms may be a lapse into periods of unconsciousness, or actual coma, a lowered diastolic pressure, and a low pulse rate. Now we should bring into play our more permanent dehydration to aid our temporary glucose osmosis therapy. Fluids should be limited to 600 c.c. per twenty-four hours. But if a daily

spinal drainage is being performed to remove blood cells, the fluid intake may be safely raised to 900 c.c. However, should spinal drainage be discontinued, do not fail to return to the 600 c.c. daily fluid intake. For further dehydration, 1.5 ounces of magnesium sulphate in 6 ounces of water is given by mouth if the patient is conscious, and need not be calculated in the fluid intake because this fluid will not be absorbed. If the patient is unconscious, 3 ounces of magnesium sulphate in 6 ounces of water may be given as a retention enema for the same purpose. Although this enema may be retained but a short time, it will be found very effective in removing fluid through the lower bowel, and may be repeated as often as necessary.

The diet should be limited to solid foods of low water content. Watery vegetables should be avoided. No salt or salty foods should be included, for they will make the patient more thirsty and the salt will tend to hold water within the tissues. Sweets of all kinds, pastries, jelly, and ice cream, along with all types of alcoholic drinks should be prohibited as they, too, will only add to the patient's thirst.

The tongue should be quite dry. This will give you a valuable sign as to the patient's water balance. However, if at any time you are in doubt about the water balance, do a spinal puncture, not for spinal drainage, but to determine the cerebro-spinal fluid pressure.

The *third stage* is that of convalescence. This generally takes place from the fifth to the fourteenth day. No patient, with a head injury severe enough to cause a definite period of unconsciousness, should be allowed out of bed before the fourteenth day. During this time, if progress is satisfactory, medication can be discontinued. Cerebro-spinal fluid pressure can be

maintained by limiting fluid intake to 900 c.c. per twenty-four hours. It is important, during this time, to protect the patient from developing a suggestive hysteria or a compensation neurosis. Patients with head injuries are very susceptible to suggestion during convalescence. Relatives and friends should be advised not to speak of his injury and the possible after-effects.

The *fourth and last stage* includes the sequelæ. These most frequent after-effects are headache, vertigo, disturbance of hearing or vision, and general weakness. They are generally due to continued edema of the brain with its increased pressure, or to free blood cells in the cerebro-spinal fluid. The intracranial pressure may be controlled with a continuance of limited fluid intake. This fluid intake, as a rule, should not exceed the 900 c.c. level per twenty-four hours and should be continued for at least three months. The free blood cells, if found in the spinal fluid, should be removed by repeated spinal drainage.

In conclusion, let me repeat a few important points that I hope we will all remember. Edema and slow bleeding are the usual causes of increased intracranial pressure. Increased intracranial pressure will cause immediate embarrassment to the cerebral circulation. This blood volume must be maintained at all costs. A deficiency of oxygen and nutrition to brain cells for only a few hours will cause permanent damage. Room must be provided in the skull for edema and hemorrhage. This room is furnished best by the removal of cerebro-spinal fluid through osmosis and dehydration.

If we remember these elementary principles, common sense, good judgment, and a smattering of physiology will, in a large measure, dictate the proper therapeutic procedures.

CHRONIC SUPPURATIVE OTITIS MEDIA*

HENRY L. WILLIAMS, M.D.

Rochester, Minnesota

CHRONIC suppurative otitis media is attributed to two types of pathologic change: (1) to chronic infection of bone with resulting small sequestra, granulation tissue gradually

undergoing hypertrophy to form polyps and hyperplasia of mucosa with infiltration of the submucosa by round cells; or (2) to stratified squamous epithelium replacing the mucous membrane of the middle ear and forming the matrix of a mass of desquamated epithelium, degenerated leukocytes and bacterial débris known as

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a cholesteatoma. In the first of the aforementioned types, the chronic suppuration only rarely spreads beyond the confines of the middle ear itself, but in the second type it is more likely to extend into the mastoid antrum. Tuberculosis, syphilis, and malignancy present problems outside the scope of this paper.

Hadjopoulos studied the type of infection produced by various strains of streptococci. He found that there were strains of facultative anaerobes of the type of the *Streptococcus faecalis*, that acted as pathogens in partially or totally closed chronic foci of infection. In the mastoid cells the course of the infection produced by these organisms is usually protracted, the infection tending to produce complications of a chronic nature, with abundant granulation tissue.

Wittmaack described a diploic type of mastoid, the lining membrane of the cells of which is composed of a tall columnar type of epithelium and a very vascular, hyperplastic submucosa. He expressed the belief that this type of mastoid was produced by irritation of the embryonal mucous tissue which is the origin of the cellular system of the mastoid, and that the irritation transformed the pneumatic cellular system of the mastoid into a system of the diploic type, with hyperplastic submucosa. Wittmaack expressed the opinion that this type of mucosa has a less than normal resistance to infection and favors not only chronic suppuration but also replacement of the mucosa of the middle ear and tympanic antrum by stratified squamous epithelium.

Signs and Symptoms

The general symptoms of chronic otitis media are purulent discharge from the middle ear, more or less interference with hearing and occasionally some deleterious effect on the general health. The discharge from the ear may be extremely foul or may have little or no odor; it may vary in quantity from an amount sufficient to form only a slight crust over the attic or ear drum to a quantity sufficient to require changing the pledget of cotton, with which the ear is usually plugged, several times a day. It may be mucoid, it may be largely purulent or it may contain fragments of cholesteatoma or exfoliated bone. On examination, the source of pus usually can be identified readily as the middle ear, the pus pass-

ing through a perforation of varying size in the ear drum or through a fistulous opening which enters the canal lateral to the ear drum and communicating with the attic. The site of the perforation in the tympanic membrane has no relation to the amount of impairment of hearing, which depends on the amount of scarring about the foot plate of the stapes or exceptionally on some injury to the cochlea. Many patients who have chronic suppuration of the temporal bone suffer from anemia, lack of vigor and other symptoms of absorption of toxic substances. Of chief interest to the physician, however, are the signs and symptoms which indicate whether treatment holds out hope of cure or whether surgical operation will be necessary.

Clinical Classification

In an attempt to clarify these indications, the following classification of chronic suppurative otitis media, based on clinical grounds, is presented. It is modeled on a classification long in use at The Mayo Clinic.

Type 1.—In this type, the discharge from the ear is mucoid or purulent but the odor of decaying bone or of cholesteatoma is absent. The perforation may be large or small and the mucous membrane, when it can be seen, appears normal. The history is characteristic in that there are periods of dryness which usually are terminated by the appearance of an acute infection of the upper part of the respiratory tract. The roentgenogram of the mastoid at most gives some evidence of sclerosis.

Type 2.—In this type, in addition to the findings characteristic of type 1, there may be evidences of disease of bones of the middle ear, especially of the ossicles, with hyperplastic changes in the mucous membrane, and polyps of granulation tissue which spring from the annulus tympanicus or promontory.

Type 3.—The discharge in this type is fetid and usually profuse. There may be considerable underlying disease of the bone, evidenced by polyps of granulation tissue which spring from the tympanic attic and aditus. Examination of the attic may reveal the presence of cholesteatoma. Roentgenographic evidence of sclerosis in the mastoid is usually well marked.

Type 4.—In this type the discharge varies in quantity. It may be so slight as to constitute

a small crust over a perforation in the attic but invariably it is foul and usually it has the characteristic odor of cholesteatoma. The tympanic membrane may be intact and the discharge may come through a fistula in the superior wall of the external auditory canal, without involvement of the tympanum. The perforation may, too, be in the membrana flaccida, or central or marginal perforations of the membrana tensa may be present. Polyps composed of granulation tissue may be particularly abundant and frequently originate from the region of the round or oval window. Varying degrees of nerve deafness may be present, the labyrinthine fistula test may be positive and various degrees of malfunction of semicircular canals may be present. A roentgenogram of the mastoid process may disclose definite evidence of the presence of a cholesteatoma, although negative roentgenographic evidence is of no diagnostic value.

The Decision Whether or Not to Operate

When definite evidences of impending or present complications, such as headache, convulsions, drowsiness, choked disk, sepsis, vertigo, nausea and vomiting, and palsy of the cranial nerves are present, the necessity of immediate operation is of course obvious. However, the condition should not then be classified as chronic otitis media but it should be placed under the heading of whichever complication is present. An acute exacerbation occurring in the course of chronic otitis media also should call for immediate surgical intervention, for the amount of sclerosis that usually is present tends toward the production of complications.

In chronic suppurative otitis media of type 1 or type 2, continued suppuration usually depends on inflammation in the eustachian tube and treatment directed to this usually will give a successful result. Forcing of mild silver protein through the eustachian tube is especially useful. In these same first two types, diseased adenoids and tonsils, or a septal deflection, or disease of the paranasal sinuses may be causes of continuing infection and should receive attention. Polyps of granulation tissue should be removed with caution and cut off with a snare near their origins rather than avulsed, and further reduction should be accomplished by chemical cauterization. It is to be remembered that polypoid granulations are

protective, to some degree, against infection, and that their removal exposes raw surfaces to the action of pathogenic bacteria. When they originate from the cochlea or horizontal semicircular canal, their removal may precipitate acute labyrinthitis or meningitis. If meningeal or labyrinthine signs are produced by any of these procedures, surgical intervention should be immediate. In the presence of chronic, suppurative otitis media of type 3, when cholesteatoma is present, the condition may be treated by lavage with the Hartman cannula and syringe, but watery solutions should be strictly avoided for cholesteatomas are extremely hygroscopic and acute swelling of the mass may be produced. Alcohol or acetone are the fluids of choice. If necrotic ossicles are present, their removal will facilitate recovery. After gross disease has been removed, the use of boric acid dissolved in alcohol or the Sulzberg powder, consisting of one part of potassium iodide and three parts of boric acid, usually will dissipate any remaining infection.

If there is cholesteatoma in the attic, or if granulation tissue springs from the region of the antrum, attempts at treatment should not be persisted in longer than three weeks unless there is considerable evidence of improvement. Lack of improvement is evidence of extension of disease to the tympanic antrum and identifies the condition as of type 4. With extension of the disease to the tympanic antrum, especially when cholesteatoma is present, attempts at treatment are not only futile but are dangerous to the patient. Erosion of bone and exposure of important structures are produced by expansion of the cholesteatoma, and if it lies in such a situation that it cannot be removed without better exposure, operation is indicated. As Ballance stated, "Many so-called indications for the performance of the mastoid operation in cases of chronic otorrhea clearly point to the imminence or to the actual existence of one or the other of the complications which the operation is designed to avert, and, as in appendicitis, an abscess tells the tale of an opportunity lost and of danger incurred, so such a complication likewise tells the tale of lost opportunity and needless danger. Why condemn a patient with a discharging sinus in the temporal bone to harbor his disease for months or years, when no surgeon would leave

a patient with similar disease, for example chronic empyema of the chest or a sinus in the os calcis, to the caprice of fortune?"

Some Details of Surgical Technic

The surgical approach in disease of the middle ear, attic and tympanic antrum is possible by two routes: One through the external auditory meatus and the other posterior to the attachment of the auricle, through the portion of the temporal bone which overlies the tympanic antrum, aditus and attic.

The approach through the meatus seems reasonable only in those cases in which the disease is confined to the middle ear and attic, or when the tympanic membrane is too well preserved to permit of adequate intrameatal treatment. This is especially true when remnants of the ossicles are diseased and seem to be the primary cause of the discharge. If however, the middle ear is apparently not involved and the tympanic membrane is intact even if the disease seems confined to the attic, removal of the tympanic membrane would leave exposed the medial wall of the tympanum covered by a more or less normal mucous membrane. The tendency of this membrane to secrete mucus would produce a constantly discharging ear and although this would not be serious the patient would have the impression that attempts to cure his disease had failed.

When the disease is confined to the attic and the tympanic membrane has been destroyed, operative procedures are usually unnecessary or consist at most in removing the overhanging wall of the tympanic attic. When, however, the suspicion arises that the disease has extended to involve the mastoid antrum, it would seem contrary to sound surgical judgment to attempt exposure through this narrow field. As Ballance stated, "Why try in the dark meatus to carry out a partial or complete mastoid operation when the trend of modern surgery is to bring every stage of every operation into the light?" Greater force is added to this injunction if the anatomic variations that are present in many of these chronically diseased ears are recalled. In many instances the dura of the middle fossa hangs below the level of the roof of the attic, dipping laterally, and often the sigmoid sinus is far forward, separated from the mastoid antrum by only a thin shell of bone. There are instances

in which the cholesteatoma has advanced medial and posterior to the sigmoid sinus and has undermined the temporal lobe. When the meatal approach is used, the risk of operation is increased and exposure is decreased for the questionable advantage of avoiding a scar of mastoidectomy; when as a rule this scar is invisible in a few months.

The fundamental difficulty in chronic suppurative otitis media is usually in replacement of the mucous membrane which normally lines the attic, aditus and antrum of the tympanum by squamous epithelium. The inherent tendency of this epithelium is to desquamate and this results in the formation of a cholesteatoma. This cholesteatoma, confined in a virtually closed cavity, erodes the surrounding bone through pressure and thus exposes to infection the structures of the inner ear, the sigmoid sinus, the temporal lobe of the cerebrum, or the anterior aspect of the cerebellum. Therefore, the problem to be solved in surgical operation for chronic, suppurative otitis media is only rarely that of eliminating disease and is usually the mechanical one of giving free exit to the products of desquamation.

When the middle ear is not involved by disease, it would seem the part of wisdom to leave the tympanic membrane to seal off the normal mucous membrane of the middle ear from the cavity formed by the radical operation, thus being fairly certain of terminating the discharge from the ear. The modified radical mastoid operation first suggested by Bondy, and lately revived by Lillie, accomplishes this purpose excellently. In this technic, before the postauricular incision is started, the membranous meatus is cut through to the bone just lateral to the attachment of the tympanic membrane. This prevents tearing of the tympanic membrane when the membranous meatus is elevated. The overhang of the attic, the "bridge" over the aditus, and the bone over the antrum are removed as in the ordinary radical mastoidectomy, but interference with the tympanic membrane and with the structures of the middle ear is avoided. The free margin of the tympanic membrane that is left after removal of its superior and posterior attachments is folded down over the protruding heads of the malleus and incus and is packed in place. This technic also tends to reduce scarring in the middle ear and thus conserves hearing.

This is a secondary consideration, however; the most important effect is the sealing off of the mucous membrane of the middle ear. As a secondary effect it is found that these cavities epithelize relatively fast because of the outgrowth of epithelium from the free margin of the tympanic membrane.

In performing the ordinary radical mastoidectomy in those cases in which the disease has involved the middle ear, the incision in the bone is started a little forward of the position of the center of the bridge and the removal of bone is kept on the slope of the mastoid process as it passes medialward to form the posterior wall of the external auditory canal. The area of bone removed extends from the level of the tegmen antri to the tip of the mastoid process. This type of removal of bone has several advantages over the more posterior removal frequently employed. It leaves a smaller cavity which takes less time to epithelize; the facial ridge is being lowered at the same time that the mastoid cortex is being removed; if a forward lying, superficially placed sigmoid sinus is present, as is frequent in these contracted mastoids, it is less endangered. If the mastoid process is the seat of widespread disease of bone, the removal of bone must, of course, be extended. After the antrum has been exposed, the overhanging bone of the attic is removed and the bridge of bone over the aditus ad antrum, which separates the middle ear from the antrum, is chiseled away. The facial ridge is then lowered as nearly as possible to the level of the horizontal semicircular canal.

A warning of approaching danger is furnished by bleeding from a small artery in the bone as the horizontal semicircular canal is approached. Particular care should be taken to remove the triangular beak of bone that overhangs the fenestra ovalis. The middle ear is then cleaned of any remnants of tympanic membrane and necrosed ossicles that may be present, together with any cholesteatoma that may have formed in the cavity of the middle ear. The tympanic opening of the eustachian tube is identified and the pulley of the tensor tympani muscle is removed. Care is taken to curet away from the facial canal. The mucous membrane is then removed from the eustachian canal with a Yankauer curet. Some caution is used in curetting medially and superiorly, as the bone between the

carotid artery and the eustachian tube sometimes presents larger or smaller dehiscences. If pneumatic cells are present above or below the eustachian orifice, they should be curetted away. The ravinian ring, to which the tympanic membrane is attached, should next be removed and the tympanic bone should be lowered until the hypotympanum can be easily inspected. The surgeon should make sure, at this time, that there are no extensions of the cavity of the middle ear underneath the facial ridge. After these procedures have been carried out, the cavity formed by the radical operation should present no cranies which do not drain freely to the exterior, and of the greatest importance in accomplishing this is to have the facial ridge well lowered. If dura has been exposed over the temporal lobe or sigmoid sinus, the edges of bone about the opening are inspected to see that sharp points or chips of bone are not pressing against the dura. The dural exposure should be made sufficiently wide to allow intradural pressure to force the dura firmly against the edges of bone, and to prevent extension of disease between the dura and the bone. If cholesteatoma has been found in the tympanic cavity and mastoid antrum, its matrix is carefully left in place, for it is the best possible skin graft and is more closely applied to the underlying bone than any graft applied by the surgeon can possibly be.

The plastic or meatal flap on the auditory canal is next fashioned from the membranous meatus. There is no single plastic operation which is best suited to all cases and the posterior flap must be cut to fit. It may be said in general, however, that the conchal opening must be made sufficiently large to allow for its contraction in healing, and that the flap should never be allowed to lie on exposed dura. Whenever possible I prefer the plastic technic of Körner, for the long flap allows covering of a part of the posterior wall of the incision in the bone and produces a sufficiently wide meatal opening.

Following the plastic operation the cavity is packed through the meatus and the postauricular wound is sutured. The packing is left in place for about five days. Following removal of the pack nothing is replaced and secretions are removed by gentle suction. Care is taken to avoid curetting granulations that may form for, in my opinion, this tends to produce excessive

growth. If the diseased tissue is completely removed, healing usually takes place without incident. The important thing is to leave behind no diseased tissue. If in doing the operation fistulous tracts are found leading to the dura of the middle fossa or of the posterior fossa, they should be followed and sufficient dura exposed to uncover their source. If a fistulous tract is found penetrating the dura, it should be enlarged and the brain abscess should be evacuated. If fistulous tracts lead around the capsule of the labyrinth they should be followed to their source, even if it is necessary to sacrifice the semicircular canal system to drain the petrous apex. If this thoroughness in operating is carried out, little trouble will be experienced in securing a well epithelized cavity and skin grafting will be found unnecessary in the majority of cases.

Conclusions

1. Cases of chronic, suppurative otitis media

can be divided, on clinical grounds, into a class that will respond to medical treatment and a class that requires surgical management.

2. The surgical problem to be faced is usually that of securing free escape for epithelial débris. Occasionally disease of bone may be present and then extensive exploration may be required.

3. The matrix of the cholesteatoma should be preserved if possible.

4. Details of surgical technic are of importance in the result.

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ACUTE SURGICAL MASTOIDITIS*

F. G. FOLKEN, M.D.

Albert Lea, Minnesota

IN dealing with this subject I merely wish to bring out or recall some of the principal points in the diagnosis of acute surgical mastoiditis, which is a pathological state that precedes a surgical mastoiditis. The former may exist without ever requiring operation to obtain complete restoration of health and function.

Let us, first, clearly establish in our minds what an acute mastoiditis means. It is an acute inflammation of the mastoid antrum and cells, which most always is secondary to an acute involvement in the middle ear. Very rarely is it primary. We must, also, keep in mind the anatomical and histological structures involved. The antrum is a passage in the temporal bone connecting the middle ear cavity with the pneumatic cavities in the mastoid portion of the temporal bone. All are lined with connective tissue, which is continuous throughout.

Professor Rutten of Vienna proved, by the histological study of many temporal bones, that an acute mastoiditis is present within a few hours after the onset of an acute otitis media. In his

lectures he would go so far as to say that the two conditions always existed at the same time, varying only in the degree of involvement. This is also proven by the fact that pain, tenderness, and many times swelling, over the mastoid area appear within a few hours after the development of a middle ear infection. These symptoms are found in a large number of cases; however, operative intervention is only necessary in 12 to 15 per cent.

The question now arises, when does an acute otitis media or an acute mastoiditis (I mention both because when we are thinking of one we must have the other in mind) require surgery? In other words, when does it become a surgical mastoiditis? It is not difficult to arrive at this conclusion in a typical textbook case, but often it is very difficult in the atypical type.

In a typical type the history reveals that the pain in the ear occurs during or following an attack of some disease or inflammation in the upper respiratory tract, with an otorrhea following a paracentesis or spontaneous rupture of the drum and a fever of two to five days duration.

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The discharge continues to be rather profuse and three weeks later pain reappears with an elevation in temperature, there is a sagging of the posterior-superior wall of the external canal and there is tenderness either over the mastoid tip or antral region or both. In such a case surgery appears to be obvious.

On the other hand it may not be so simple a picture. Infections of the para-auricular glands and involvements in the external auditory canal must be differentiated. To do this one must first obtain an accurate and complete history, especially in regard to the onset and general systemic reaction. The hearing test must not be neglected and the drum picture should be carefully studied, observing its position as well as the presence or absence of its details. The blood picture and x-ray are at our disposal. However, either are misleading in many cases.

The foregoing is mentioned merely to keep the surgeon on his guard. Recently, a three year old child, upon whom a mastoidectomy had been performed three months previous, was brought in for an operation on the opposite side. Examination revealed a healthy looking subject with a scar over the right mastoid. The left external ear was displaced forward by an inflammation that covered the entire mastoid. The posterior-superior wall of the external canal was noticeably edematous and the tympanic membrane was only faintly visible. The history revealed that the onset was gradual and without any apparent pain. The child had suffered intermittently during the previous six months from furunculosis of the scalp and upon close examination several boils were found located over the left side of the head. The child at no time during its life had had a discharge from either ear. The temperature was 99 degrees and the white blood count was 13,000. Because of the absence of an otic discharge it was reasonably certain that the post-auricular swelling was due to an inflammation in the superficial lymph glands, secondary to the furunculosis of the scalp. After three days of treatment directed along these lines, most of the findings about the ear had subsided. No doubt the same condition had existed on the right side and had led to an error in diagnosis and an unnecessary mastoidectomy.

We have all seen infections of the para-auricular glands and furunculosis of the posterior wall of the external canal, due especially to an asper-

gillus infection, which was difficult to differentiate from a surgical mastoiditis.

In an atypical case the picture at the onset may be the same as it is in the typical type. On the other hand the symptoms may be quite obscure. I have seen several cases in which the tympanic membrane had been opened several times within ten to fourteen days, each paracentesis being followed by a very moderate discharge. There was no sagging of the canal wall nor edema over the mastoid area. Tenderness was present only when firm pressure was applied to the mastoid tip and the drum had a "beefy" appearance. This appearance I consider very important because its presence has in many cases been a greater aid to me than the x-ray in arriving at a decision to operate.

In one such case the mastoidectomy was performed on the twenty-eighth day after the first symptoms of impaired hearing and a deep throbbing sensation in the ear became manifest. There was no history of previous ear trouble. Upon opening the tegmen, pus under pressure appeared and there was extensive sequestration and infection in the entire area of a pneumatic structure. The antrum was very narrow and could be entered only with a probe or a small curette. A pure culture of streptococcus hemolyticus was obtained from the field of operation.

The unusual finding in this case was the very small antrum in a pneumatic mastoid. The pre-operative picture would have led one to conclude that a sclerotic or diploic structure existed. The antrum in these two anatomical types is, usually, small, the pain is deep seated, the systemic reaction is moderate or absent, the x-ray gives only limited information and the history brings out the existence of otitis media in infancy or repeated attacks during childhood.

The case mentioned was atypical both in symptoms and operative findings. In my experience fully 30 per cent have been of this obscure type.

Because of limited time for this presentation it is not possible to cite other cases and the indications which led to the final decision to operate. However, it may be well to recall to your minds several ideas or rules which have been a great aid to me. They may be applied in any case of acute otitis media to determine whether there is present or not a surgical mastoiditis.

1. Operation is seldom indicated before the tenth day after the onset of the otitis media. In

other words do not operate too soon. The term hemorrhagic mastoiditis is only a descriptive phrase of early involvement; it is not a surgical mastoiditis.

2. The appearance of the tympanic membrane is a very important guide, especially if it looks like a mass of granulation.

3. Do not conclude that a mastoidectomy is necessary because the otorrhea has existed more than six to eight weeks. The removal of a polyp from the drum membrane may stop the discharge within forty-eight hours.

4. Do not make a diagnosis of mastoiditis just because there is an edema over the mastoid area and a discharge from the external auditory canal. This may be an aspergillus infection complicated by a furuncle on the posterior wall. The discharge from an aspergillus external otitis, even though of short duration, is fetid.

5. The discharge from an acute otitis media never has an odor, except in infants under eighteen months of age, when there may be a slight odor.

6. Do not conclude that there is tenderness over the mastoid tip when the pressure is applied over its posterior surface. The pressure should be applied over the anterior surface, directed in-

wardly and posteriorly. Pressure applied over the posterior surface of a healthy tip will cause tenderness.

7. Do not hesitate to enlarge an existing opening in the drum if the membrane is bulging.

8. Swelling of the eyelids on the affected side indicates congestion of the venous circulation over the petrous portion of the temporal bone.¹ The bleeding caused by free incision of the drum relieves the congestion and the edema subsides in a few hours. However, if the edema persists a mastoidectomy is indicated.

9. All laboratory findings should be utilized and carefully studied, but do not be guided entirely by them.

10. A careful and complete history is necessary before making a final decision. The surgeon should never fail to realize that the operation is performed not only to eradicate the infection, but also to restore function in the ear. Failure to obtain these results is, usually, because the antrum has not been opened and the diseased, cellular structures eradicated.

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SEVERE CUTANEOUS REACTIONS TO THE BARBITURATES*

S. E. SWEITZER, M.D., AND CARL W. LAYMON, M.D.

Minneapolis, Minnesota

DRUG allergy or idiosyncrasy has been defined¹ as a condition of such hypersensitivity to a drug that an effect of an unusual yet characteristic nature is produced by a quantity of the substance which, for most individuals, lacks appreciable physiologic action. Idiosyncrasies produced by drugs are entirely different from their toxic actions resulting from overdosage. The latter are usually uniform in their manifestations, while the idiosyncrasies vary in different people and in the same person at different times. Likewise, the same allergic reactions may be produced by different medications.

The wide variation in the types of eruptions that may be produced by drugs has been well discussed in the past few years by Wise and

Parkhurst,¹⁰ Eller,² C. Guy Lane,⁵ Unger⁹ and Wise and Sulzberger.^{7,8,11} The usual forms of dermatitis medicamentosa and the drugs most commonly producing them were enumerated by Wise and Sulzberger¹¹ as:

1. Truly edematous eruptions with erythema, vesiculation, weeping and scaling (quinine, procaine hydrochloride, ephedrine, mercurials, sometimes arsphenamines, et cetera).

2. Urticarial eruptions (belladonna, atropine, the morphine group, phenolphthalein).

3. Scaly, erythematous eruptions, purely erythematous or scarlatiniform, and morbilliform and dermatitis exfoliative-like conditions (arsenic, arsphenamine, belladonna, balsams, the heavy metals).

4. Erythema multiforme-like eruptions (phenolphthalein, antipyrine, salicylates).

*From the Division of Dermatology, University of Minnesota, H. E. Michelson, M.D., Director; and the Dermatology Service, Minneapolis General Hospital, S. E. Sweitzer, M.D., Chief. Read before the Minnesota Academy of Medicine, October 7, 1936.

5. Erythema nodosum-like eruptions (iodides, bromides).

6. Acneform, furunculoid and erysipelas-like eruptions (bromides, iodides, chlorine, oils and tars, et cetera).

7. Ulcerating and vegetating eruptions (bromides, iodides).

8. Purpuric eruptions (iodides, arsphenamines, particularly sulpharsphenamine, balsams).

9. Fixed and circumscribed, erythematous or bullous and polychromatic pigmented eruptions (phenolphthalein, antipyrine and sometimes the arsphenamines).

It is the purpose of this paper to call attention to the possible dangers and especially to severe cutaneous reactions which may follow the administration of the barbiturates. This group of drugs is, at present, the most widely used of any of the agents to produce sleep. Most physicians apparently prescribe these compounds without adequate appreciation of the potential dangers involved. While it is true that in the majority of cases even the prolonged usage of the barbiturates causes no trouble, we have observed fatal reactions following the ingestion of only a few doses of these drugs. It is worthy of note that in the preceding list, Wise and Sulzberger did not mention any of the barbiturates as possible etiologic factors in drug eruptions. In a personal communication to one of us (S.E.S.), however, Sulzberger stated that the barbiturates may cause sensitization to light, leukopenia and vascular damage. R. L. Mayer,⁶ in his monograph on drug eruptions in Jadassohn's *Handbuch*, briefly mentioned several of the barbituric acid derivatives as causative agents in the production of dermatitis medicamentosa, and cited a few reports of deaths following the administration of nirvanol and luminal.

Since the use of these drugs is so widespread, it seems that every physician should be cognizant of the possible dangers involved, and that further warning concerning untoward reactions may be timely. The point may be reached when these drugs will be subject to the same legal supervision as are the opiates at the present time. The following cases are illustrative of the severe reactions which may follow use of the barbiturates. Cases 1, 3, and 4 represent the third type mentioned in the table of Sulzberger and Wise; i.e., eruptions which were erythematous and morbilliform at the onset and progressing to exfoliative

dermatitis. There appear to be no important differences between the first and third types of drug eruptions which were mentioned in Wise and Sulzberger's classification. Many drug eruptions may be erythematous and morbilliform at their onset, passing through a weeping, eczematous stage as they become more intense and finally going on to exfoliation. Case 2 represents Wise and Sulzberger's type 4 since the eruption was not unlike severe erythema multiforme.

Reports of Cases

Case 1.—A. S., white, female, forty-eight years of age, was admitted to the Minneapolis General Hospital on July 2, 1934, complaining of redness and itching of the entire skin, of two weeks' duration. About five weeks before admission (May 24, 1934) she had consulted physicians in the out-patient department concerning obesity and was given a low caloric diet and phenobarbital ($\frac{1}{2}$ grain) three times daily. After taking the medication approximately two weeks, a red, itchy eruption appeared on the face and neck and within a few days spread downward over the entire body. At this time there was no coryza or sore throat, she felt well and she had not been exposed to any contagious disease. The medication had been discontinued on June 14, 1934. The patient's health, before the onset of the present condition, had been excellent, but she felt feverish following the appearance of the eruption and had two chills on the day of admission.

Examination: On admission the patient's temperature was 101.5, pulse 112, and respirations 26. She appeared acutely ill and presented a generalized, bright red, macular, scaling eruption on the back and thorax. (The condition resulted from the confluence of a generalized, macular, morbilliform eruption of a few days previously.) No portion of the skin was spared, except the palms and soles. Examination of the mouth showed that the tongue and pharyngeal and buccal mucosa was intensely inflamed, hot and dry. There was bilateral enlargement of the cervical, axillary and supraclavicular lymph nodes. The lungs were apparently normal. There was a systolic murmur over the pulmonic area.

The laboratory findings were as follows:

Urine: dark, cloudy, amber
acid
albumin, 2+
sugar—negative
occ. granular casts
few R.B.C.
many pus cells

Blood: Hgb., 112
R.B.C., 6,160,000
W.B.C., 22,900
P.M.N., 38
Lymphocytes, 42
Monocytes, 1
Eosinophiles, 17
Basophiles, 2
Wassermann—negative
Kahn—negative
Blood urea nitrogen—29 mg./%
July 7, 1934, x-ray of chest: No pathologic changes.

Course: In spite of supportive therapy the patient became progressively worse, the fever rose gradually to 103.6, and she died 12 days after hospitalization (July 11, 1934).

The post-mortem findings were summarized as follows: heart, normal; pleural cavities, normal; lungs, terminal bronchopneumonia; gallbladder, 16 cm. long by 6 cm. wide, contained twenty stones (largest 1.5 cm. in diameter), and clear fluid; spleen and gastro-intestinal tract, normal; liver, fatty metamorphosis, grossly pale and cloudy; pancreas and adrenals, normal; kidneys, normal; spleen culture, negative; skin, exfoliative dermatitis.

Case 2.—K. B., aged fifty-eight, was admitted to the Minneapolis General Hospital, November 11, 1935, complaining of the coughing of blood for three days. After study on the medical service the following diagnoses were made: coronary sclerosis, auricular fibrillation and possible infarct of the lung. On November 29, 1935, the patient was given butyl-ethyl barbituric acid (grs. 3) daily, on account of general discomfort. The drug was continued almost daily (with a few lapses) until January 22, 1936.

On January 11, 1936, the patient developed a grouped vesicular eruption over the suprapubic region, elbows and thighs. The lesions, within a few days, became dark red in color (almost hemorrhagic), suggesting a diagnosis of erythema multiforme or dermatitis herpetiformis. The throat became red and swollen, on January 25, 1936, and in spite of blood transfusions, the patient died on January 27.

The findings in the blood were as follows:

	W.B.C.	HGB.
Nov. 24.....	9,200	77
Dec. 3.....	8,400	88
18.....	6,100	90
31.....	1,100	80
Jan. 8.....	1,500	
26.....	550	
26.....	500	
26.....	1,100	(No P.M.N.'s, all lymphocytes)
27.....	250	

Autopsy was refused. Final diagnoses were: dermatitis medicamentosa and agranulocytosis.

Case 3.—M. L., white, female, aged sixty-seven, had suffered with bronchitis since January, 1936. On account of general discomfort and loss of sleep, her physician had prescribed sodium pentobarbital for ten days before admission to Minneapolis General Hospital on April 1, 1936. Four days after the medication was begun, the patient began to feel drowsy and noticed a generalized, itchy, red eruption. Due to the added discomfort, more sedation was advised, and the eruption became rapidly more severe until the patient's admission to the hospital.

Except for pneumonia, four years previously, the patient's health had otherwise been good.

The laboratory findings on admission were as follows:

April 4, 1936.
Blood sugar, 95 mg./%
Urine: acid
albumin, 4+
sugar—negative
hyaline casts—numerous
granular casts—numerous
pus cells—numerous

April 2, 1936.
Blood: Hgb., 84
W.B.C., 34,250
P.M.N., 81
Lymphocytes, 5
Monocytes, 1
Eosinophiles, 13

April 4, 1936: Wassermann—negative

April 3, 1936: Roentgenogram of the lungs: Pneumonic process, right lower lobe.

Course: The patient developed anuria, increasing edema of extremities and finally pulmonary edema and died on the fifth day of hospitalization (April 5, 1936). A diagnosis of acute nephritis was made by Dr. George Fahr, on April 4, 1936. Autopsy was refused.

Case 4.—S. M., white, female, aged fifty-six, had been given phenobarbital for hypertension by a physician sometime during the summer of 1935. She remained well until about August 1, 1935, when she developed symptoms of an acute upper respiratory infection and a red, itching eruption involving the entire body. The medication was discontinued on August 10, 1935, but by this time the lesions had become confluent over the chest, abdomen and back, the eyes were swollen almost shut and the throat and mouth were hot and dry. The condition went through an extremely stormy course and the patient was confined to bed for three weeks. On several occasions a lethal outcome seemed probable. The temperature varied from 100 to 102 F. The edema of the face gradually subsided and the integument completely exfoliated during the month of August. The hair and nails were entirely lost and it was several months before the skin became normal.

Discussion

The wide variations in the clinical features of drug eruptions are well known and will not be considered in detail here. It is perhaps unnecessary to say that many odd eruptions resembling, but not quite fitting, the picture of some common dermatosis may be caused by the ingestion of drugs. The clinical features of the superficial, eczematous, type of dermatitis medicamentosa which is commonly caused by the arsphenamines and, occasionally, by quinine, the barbiturates, or other drugs, are frequently indistinguishable from those of dermatitis of external origin. Jadasohn⁴ studied extensively the mechanisms of sensitization and the site of sensitivity in eczematous drug eruptions, and showed that cutaneous sensitization might take place from without or within, and that contact with the same offending sub-

stance might likewise be of external or internal origin. Many cases have been recorded which illustrate this fact, such as that of Ford's³ in which sensitization to quinine first took place on the face from the external use of hair tonic, and the eruption recurred in exactly the same areas following dermatitis on the genitals due to quinine in a contraceptive medication with absorption and transference of the drug through the blood stream to the previously affected areas. Transfer from the genitals to the face was unlikely because the hands were free from eruption.

Wise and Sulzberger reported the case of a woman who came to the clinic for treatment of acute contact dermatitis due to "dandruff cure" containing quinine. Patch tests to 1 per cent quinine hydrochloride were strongly positive. A year later the patient ingested quinine in a laxative tablet and within three hours there was a generalized eruption. This eruption healed, but the sites which had been previously affected remained eczematous for weeks. Patch tests with quinine were again positive. Similar cases, reported frequently, serve to substantiate the belief that the route by which the excitant reaches a hypersensitive tissue is not as important as the location or the point at which hypersensitiveness exists.

In drug eruptions other than the eczematous type, contact from without fails to reproduce the eruption, presumably because the site of the sensitivity is deeper than the contact layers of the epidermis. The actual mechanism, however, may well be the same, the type of eruption being governed by the localization and type of the shock tissue, which, except for the eczematous eruptions, is unknown and possibly resides in the deeper cutis, blood vessels or nerves. The first, second and fourth cases which we observed resembled the severe eczematous type of exfoliative dermatitis and from the appearance of the eruptions could have easily been confused with extensive contact dermatitis. Unfortunately, patch tests with the drug were not done on account of the generalized involvement and the rapidly fatal outcome.

As Coca has emphasized, the symptoms of drug eruptions (including the eczematous type) and serum sickness are almost identical. The cardinal symptoms are practically the same in

†In three of our cases there was intense involvement of the oral mucosae.

both (fever, edema, joint pains, local edema, incubation period, changes in blood pressure, uncommon involvement of mucosa,[†] recurrences, et cetera). The slight differences, when present at all, are of a quantitative nature and perhaps dependent on the differences between serum and drug antigens. The mechanisms of both are, in reality, unknown and, so far as anyone can say, the same. Hence it cannot be disputed that, if the mechanism in drug eruptions is identical with that in serum sickness, the mechanism of drug eruptions, serum disease and contact dermatitis may be the same. The differences in the clinical pictures may be assumed to be due to the difference in the type of excitant and the site and type of shock tissue. The eczematous type of drug eruption serves as the connecting link between the three conditions, since the same picture can be produced either from without or within the body by the same excitant. Passive transfers, with a few questionable exceptions, fail in drug allergy, serum disease and contact dermatitis. Patch tests succeed only in contact dermatitis and drug eruptions of the eczematous type, not necessarily because the mechanisms are different, but because the site of the sensitivity in contact dermatitis and eczematous drug eruptions is superficial rather than in the deeper structures (as is the case in most drug eruptions) where the excitant cannot reach by means of patch tests.

Just as the morphology of drug eruptions is heterogeneous, the possibilities as to the localization of hypersensitiveness are multiple (superficial epidermis, capillaries and precapillary vessels of upper cutis, deeper vessels, nerves, et cetera). In contact dermatitis, when the excitant reaches the hypersensitive epidermis, the general type of response is the same, regardless of whether it is a pollen, drug or any other irritant. Quinine, in hair lotion, for example, will cause contact dermatitis; when quinine is ingested and reaches the same sensitized area, the same type of eruption results. The excitant is the same, the eruption is the same, and the mechanism of the inflammatory response is probably the same. However, in another patient, if the ingestion of quinine produces *urticaria*, the excitant has not changed, but it is possible that the site or type of shock tissue, or the mechanism has changed. It is not logical to believe that the mechanism (that is, the type of antibody if any) is different for each

variation in the manifestations of idiosyncrasy to the same excitant. It is more reasonable to assume, even though it cannot be proved, that the same excitant calls forth the same mechanism which reacts, however, at different sites in the body, just as egg white in one person will cause an asthmatic attack, in another, atopic dermatitis, due to variations in the shock tissue rather than the mechanism.

After considering the question, it seems that the differences in drug allergy, serum disease and contact dermatitis are not great and that the type of excitant (serum, drugs, et cetera), the route which it takes (external, internal), and the mechanism are secondary to the site and type of tissue which the excitant ultimately reaches.

Three of our four patients (Cases 1, 3 and 4) presented dermatoses which exemplified the erythematous, eczematous type of drug eruption which, in these instances, were severe enough to cause exfoliation, systemic symptoms and death in two of the three individuals. This type of drug eruption is identical to that most commonly produced by the arsphenamines, the features of which are well known by most physicians. That the barbiturates may produce such a condition, however, is apparently not generally recognized, judging from the common use of these drugs by those who do not have a clear concept of the possible dangers which may result. In these three cases it would have been impossible, without the aid of a careful history, to definitely determine whether the eruption was caused from within by the ingestion of arsenic, quinine or the barbiturates or from without by some external agent to which the patient's integument was hypersensitive. Of course, eruptions of this type, produced from without, are usually not accompanied by severe systemic symptoms and do not end in death.

Furthermore, it is worthy of note that in two of the patients (Cases 1 and 3) symptoms of intolerance (pruritus and a mild erythematous eruption) appeared only a short time after the patients began to take the medication (two and four days, respectively). In all probability there would have eventually been a fatal outcome in Case 4 had the drug been continued.

Although Case 2 did not exemplify the eczematous type of drug sensitivity it was illustrative of the fact that similar drugs may sensitize different

sites and types of tissues. In this instance the site of sensitivity was not in the contact layers of the epidermis but in deeper structures, probably blood vessels (purpuric eruption) and bone marrow (agranulocytosis), yet the drug was similar to those in Cases 1, 3, and 4, and the outcome was fatal. Although the problems of drug sensitivity are of great theoretical interest the important point which we wish to emphasize is that physicians should be alert for possible dangerous complications arising from the use of medications which are, as a rule, innocuous.

Summary

1. Attention is called to the possible dangers attending the administration of the barbiturates.
2. Four cases (three of which were fatal) of severe cutaneous reactions to these drugs are reported.
3. The theoretical considerations of drug eruptions with reference to the mechanism of sensitivity, the localization of the shock tissue and the types of eruptions are briefly presented.
4. The resemblance of drug allergy to serum disease and of certain eczematous drug eruptions to dermatitis of external origin makes it probable that the differences between these three types of allergy (drug allergy, serum disease and contact dermatitis) are not great.
5. It is believed that the site and type of hypersensitive tissue which an excitant (drug, serum or external agent) reaches is the chief factor in the type of response to that excitant, rather than the mechanism of sensitization or the route by which the excitant reaches the tissue.

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TULAREMIA WITH LOW AGGLUTINATION TITER DISAPPEARING AFTER SERUM THERAPY

ROBERT L. NELSON, M.D.

Duluth, Minnesota

THE discovery of tularemia helped to determine the cause of some obscure fevers. Tularemia was recognized in ground squirrels in 1911 and in humans in 1914.⁶ It was first reported in Minnesota in 1926.⁵ Serum therapy was first used in 1931.² Prior to 1934 only fourteen cases had been recorded in the two major Duluth hospitals, each of which averages about 5,500 admissions yearly. Since that time, in spite of the liberal use of agglutination tests in suspicious cases, only eight additions have been made. There appears to be an almost world-wide incidence of the disease with no outstanding areas of unusual concentration.

Tularemia is a systemic disease. The variations are due to the kinds of local and general manifestations and, in all probability, to the existence of many strains and degrees of virulence of the organism. The intensity ranges from almost asymptomatic to fatal. The four types usually described are the ulceroglandular, oculo-glandular, glandular, and typhoidal. The pneumonic type probably belongs with the latter. From 80 to 90 per cent of reported cases fall in the first two groups, which are the most readily recognized. The great majority of all have more or less pulmonary involvement.¹ Doubtless the last two occupy a variety of files in the cross indices of our hospitals. This can be understood readily and explains the suspicion that many undescribed features of the disease exist.

For this reason a single case report is presented. It describes a febrile state in which the presumptive diagnosis may be questioned, but, in so doing, it illustrates important phenomena associated with the use of Foshay serum.

Case Report

On February 18, 1935, M. O., a white woman, aged twenty-four, first consulted me. She complained of fatigue, flushing, night sweats, soreness in the left side of the neck, a burning sensation and "caking" in the eyes, respiratory pain in the left lower ribs and loss of about six pounds in the past two months.

The fatigue had been noticed for about seven weeks

and was constantly increasing. Flushing had been noted for a few weeks and night sweats for a few days. She had felt feverish in the afternoon and evening for about one week. The eye discomfort had been present for about one week. The uncomfortable breathing had been increasing about the same period of time. She was getting nervous and apprehensive.

Past medical history comprised the following events. At the age of four, she had diphtheria. In 1927 an appendectomy was performed for acute appendicitis. Later in 1927 gallbladder disease with adhesions was diagnosed, the appendectomy scar was sensitive but recovery was spontaneous. In 1934 hemorrhoidectomy was performed. A window operation in March and April, 1934, for acute right maxillary sinusitis was followed by no acute recurrence of sinus disease. About November 28, 1935, soon after handling sick rabbits, a sore appeared just inside the left nostril. This persisted as a small open ulcer for about two months and then became crusted. A few days prior to my examination she had consulted another physician, who obtained a similar history and had serological tests made which were reported as showing an agglutination to *Bacterium tularense* in 1:40 dilution.

Examination showed an ashen pallor and a distinctly uneasy appearance. The scalp, hair and ears were normal. The pupils were moderately dilated but reacted promptly to light. Venous engorgement was marked in the conjunctiva and moderate in the fundus oculi. The membranes of the nose were moderately congested and swollen, and just inside the left nostril was a small crusted area. This corresponded to the site of the open sore mentioned in the history. Teeth and gums were in good condition. Slightly post-nasal drainage was present in a slightly injected pharynx. There was slight cervical adenopathy. The thyroid was barely palpable.

Excursion of the thin walled chest was free and equal. Some roughness of the inspiratory sounds was present over the larger bronchi but no parenchymal disease was noted. The size, shape and position of the heart were normal. Rhythm was regular, rate 84, and blood pressure 120/80. Slight exertion or excitement produced a rapid increase in the rate.

The abdomen was negative except for operative scarring. Both deep and superficial reflexes were slightly hyperactive. No bone or joint defects were noted.

The urine was normal chemically and microscopically. Hemoglobin was 68 per cent (Sahli). White blood cells numbered 11,000 per c.mm. of blood with 67 per cent polymorphonuclears, 31 per cent lymphocytes, 1

per cent monocytes, and 1 per cent eosinophiles. Oral temperature was 99 degrees F. Blood agglutination was absent for typhoid, paratyphoid and melitensis, and present with *Bacterium tularensis* in dilution of 1:40 (the same as a few days before).^{*} The Mantoux test gave a one plus reaction and a flat plate of the chest showed no evidence of significant pathology as reported by Dr. Gage Clement. Dr. J. R. McNutt reported x-ray films of the sinuses essentially normal except for slight thickening of the membranes about the periphery of the left maxillary sinus.

The positive agglutination report was the only definite finding. The probable diagnosis of tularemia was made and Foshay serum incorporated in the plan of treatment. After some confusion in locating the serum, a supply was obtained directly from Dr. Foshay. This was not received until March 6, 1935, sixteen days after my first examination. During this time palliative treatment had been of no help. The weakness, sweats and headaches persisted and increased, and there were more frequent periods in which the complexion was a ghastly gray. A low grade septic temperature persisted, ranging from 98.6 to 100.4.

Dr. Foshay's instructions were followed in administering the serum. An intradermal test for sensitivity was made by raising a small wheal. In a few minutes an area of erythema appeared about the site about 3 cm. in diameter. After half an hour this became slightly elevated but no urticaria or systemic reaction appeared, so 15 c.c. of the serum were given intravenously. No untoward effects were noted nor was there any appreciable change in the patient's condition. The erythema about the site of the skin test disappeared within twenty-four hours. Two days later, on March 8, 1935, 15 c.c. of serum were again given intravenously. On the following day the patient stated that she felt quite normal except for a little weakness. The temperature was normal. A blood specimen taken then was returned with a report of agglutination to *Bacterium tularensis* of 1:20.

Her subsequent course was interesting. On March 17, 1935, one week after the 1:20 report, a report was returned showing no agglutination in any dilution. She had felt perfectly well and had been fever-free during that week and had returned to work. On the following day, however, she felt quite ill and twelve nodular masses appeared in the trunk and lower extremities. They were deep under the skin, hard, indefinitely outlined, and about 2 cm. in diameter. At first they itched. They became painful during the night and then tended to disappear in the soft tissue but became slightly ecchymotic in five areas over the shins. Ephedrine sulphate relieved the itching. In forty-eight hours she had completely recovered. On March 23, 1935, August 19, 1935, and June 5, 1936, agglutination was absent in all dilutions.

Comment

In summary, a young woman handled sick

^{*}All agglutination tests were made by the Minnesota Department of Health.

rabbits in an area known to harbor animals with tularemia. She soon developed a small, open sore in the left nostril which persisted for several weeks. She gradually developed symptoms of a general systemic infection, and felt and appeared sicker than any physical or laboratory findings could justify—with the possible exception of 1:40 agglutination reactions to *Bacterium tularensis* on two occasions. Symptomatic treatment of various kinds did not prevent a continued increase in all the manifestations of illness. After obtaining a positive E-E (erythematous-edematous) reaction, the serum was administered in two doses of 15 c.c. each, two days apart. On the morning following the second dose the patient felt entirely well. The agglutination titer was then 1:20 and one week later it was absent and has so remained. The patient has remained well with the exception of the serum reaction.

In coming to the diagnosis of tularemia the following points must be considered. The 1:40 agglutination so long after the exposure to infection is very low. The decline to a 1:20 level at the time of clinical recovery and the subsequent absence of agglutination are at variance with reported statistics.^{*} While the titer in non-serum treated cases tends to diminish after the eighth week, it generally remains positive indefinitely,⁴ analogous perhaps to the positive Widal after typhoid fever. Then there is the intradermal test as described. This corresponds to the so-called positive edematous-erythematous or E-E reaction of Foshay.³ He believes it to be a bacterial specific response and a valuable diagnostic aid. Lastly comes the prompt recovery following the second administration of serum. It is conceivable that this was simply a happy foreign protein effect but personal experience discourages such a view.

The essential features of this case have been reviewed by a number of physicians, some of whom possess unusual familiarity with tularemia. The report incorporates a summary of their view as well as the apparent specific value of Foshay's serum in a case presenting an unusual problem.

The author wishes to express his gratitude to

^{*}In a personal communication in March, 1935, Dr. Foshay stated that, although he had encountered the loss of agglutinins rather frequently after the administration of goat serum, he had not previously heard of it after horse serum, which was used here.

Dr. Lee Foshay for supplying the serum and for his generous advice.

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THE SEDIMENTATION RATE IN GENERAL PRACTICE*

W. A. MERRITT, M.D.

Albert Lea, Minnesota

WHEN one considers that the rate of red blood cell sedimentation is a simple determination of proven diagnostic and prognostic value, it seems strange that the test has not come into more general use in the practise of general medicine. The phenomenon of red blood cell sedimentation was first noted by Galen, and again by John Hunter in 1791. Little significance was attached to the phenomenon until 1918, when Fahraeus revived interest. Since that time it has been extensively used, especially on the European continent, and in the past few years has become more popular on the North American continent in larger medical centers. One of the earlier American articles was written by Westergren, who described a new technic in 1926.

There are a number of methods used at the present time with the results expressed as sedimentation rate, sedimentation time, and sedimentation index. The simplest type of test would seem to be the sedimentation rate, using the technic as described by Westergren. A cubic centimeter of 3.8 per cent sodium citrate is drawn into a syringe and mixed with 1.6 c.c. of blood drawn by vena puncture. This is thoroughly mixed and placed in a graduated tube which is in an upright position. The red blood corpuscles form aggregates and settle down with a different velocity in different physiological and pathological conditions. For all practical purposes, a reading at the end of one hour is sufficient. The speed of sedimentation is probably dependent on the amount of serum globulin and fibrinogen in the blood. A normal rate is considered to be anything up to 12 mm. in one hour. During menstruation, the rate may rise to 15 mm. in one

hour, and during pregnancy after the first month, the rate increases to about 50 mm. in one hour. Bannick of Rochester stresses three principles which should be kept in mind: (1) a definite increase in the rate of sedimentation of the blood always reveals the presence of disease, but, with exceptions noted, of no particular disease; (2) the converse is not true—a normal rate of sedimentation does not mean that the patient has no disease; and (3) the rapidity of sedimentation gives some measure of the intensity of the disease, and when the level has been established in a given case, it provides a measure of the progress of the disease in that particular case.

The following table is based on the opinions of a number of authors regarding the effect of various pathologic conditions on the sedimentation rate.

Increased Rate

Tuberculosis
Syphilis
Arthritis
Pneumonia, empyema
Bronchiectasis
Acute rheumatic fever
Septicemia
Acute endocarditis
Malignancy
Anemia
Certain forms of blood dyscrasia
Acute coronary occlusion
Exanthemas
Acute pelvic inflammation

Normal Rate

Acute appendicitis without abscess formation
Mild upper respiratory infections
Gastric and duodenal ulcers
Functional diseases
Focal infections
Diabetes

*Read before the annual meeting of the Southern Minnesota Medical Association, Albert Lea, Minnesota, August 30-31, 1936.

Hypertension
 Asthma and hay fever
 Mild skin diseases
 Fibroma, lipoma, and simple cysts
 Chronic valvular heart disease
 Cardiac decompensation

In tuberculosis the sedimentation rate is an especially valuable aid in determining activity of the process. Cutler states that the test is a more reliable index of the presence or absence of activity than the temperature, pulse rate, gain in weight, or physical signs. The following case report shows the usefulness of the procedure:

Mrs. G. G., aged forty-three, gave a history of treatment for pulmonary tuberculosis of the right apex in 1926. She was discharged at that time as arrested. In July, 1936, she complained of weakness and a tired feeling. Physical examination was negative, except for impaired resonance and decreased vocal fremitus over the right apex posteriorly, and dry râles over both apices. The sedimentation rate was 10 mm. in one hour, which would indicate no activity. This finding was substantiated by a six-foot x-ray of the chest, showing old fibrosis in both apices with no apparent activity.

According to the literature, the sedimentation rate in syphilis seems to correspond to the activity. In latent syphilis, a normal rate is found.

The rapidity of sedimentation varies considerably in different malignant conditions, depending probably upon the extent of the lesion and the amount of tissue destruction. Yet relatively small malignant lesions may give a significant increase in the rate. As a rule, benign tumors have no effect on the rate. It should be stressed that patients with anemia show an increased rate, and an accurate correction for this factor has been worked out. The following case report is significant.

Mrs. H. H., aged sixty-four, was operated in March, 1934, elsewhere for carcinoma of the uterus, at which time a panhysterectomy was performed. Her convalescence was smooth until April, 1935, when she began to complain of low back pain. In May, 1935, the sedimentation rate was 54 mm. in one hour, a moderately high reading, and soon after a definite pelvic mass could be palpated. Mrs. H. died in December, 1935, as the result of metastatic carcinoma, confirming the test.

Polak of New York City has repeatedly emphasized this test as a measure of the amount of inflammation which still exists in cases of pelvic inflammation. When the operation is elec-

tive, he does not advise operation where the rate is significantly increased.

The occurrence of an increased sedimentation rate in cases of arthritis also deserves mention. Most cases of atrophic arthritis show an increased rate, while in the hypertrophic type the rate is normal. The test has long been recognized by pediatricians as an accurate test of activity in acute rheumatic fever. Rogatz of New York concludes an article on this subject by stating that in convalescent cases of acute rheumatic fever with the subsidence of acute symptoms and signs, the temperature is first to fall to normal, followed by the pulse rate, then the disappearance of immature polymorphonuclear leukocytes from the blood. Last to reach normal is the sedimentation of the erythrocytes. To prevent a child convalescing from acute rheumatic fever from getting up too soon, this test should be the criterion of inactivity. No child should be let out of bed until the sedimentation test is absolutely normal. This precaution should help to diminish serious cardiac involvement in new cases and minimize increasing damage in children already affected. The following case history illustrates this point.

Miss M. R., aged thirty, who has had two previous attacks of acute rheumatic fever, went to bed March 22, 1936, with a typical attack. Her temperature returned to normal in two weeks and her white blood cell count was never above 12,500. In eighteen days, her sedimentation rate dropped from 85 mm. in one hour to 29 mm., which is still an increased rate. At this time she was permitted to be up and around, and her rate increased to 46 mm. She was again put to bed, and at the end of seven weeks her rate had returned to 11 mm. This time it was safe for her to resume activity.

Lesser and Goldberger of New York City have written an excellent paper on the value of this test in the diagnosis of the acute abdomen. Their observations were based upon 3,000 readings in 2,000 cases over a period of two and one-half years. They conclude that the sedimentation reading in all cases of acute appendicitis, without abscess formation, or generalized peritonitis, is uniformly normal. The sedimentation readings in all other acute abdominal conditions are consistently abnormal; further, the sedimentation readings in all extra-abdominal conditions simulating the acute abdomen are consistently abnormal.

The literature concerning the sedimentation rate in coronary occlusion is unanimous in the opinion that the rate is increased in this condition. Hoffman of St. Paul states that the degree of increase is no index of the severity of the injury. He feels that a return of the rate to normal usually means healing of the infarction, but this is by no means invariably true.

Summary

1. The sedimentation test is a simple office procedure.
2. It is a valuable instrument as an aid to clinical judgment in determining prognosis, and to a slight degree in differential diagnosis.

3. It is also an important determining factor in establishing the progress of a disease.

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SOME OBSERVATIONS ON FOCAL INFECTION*

LEWIS I. YOUNGER, M.D.
Winona, Minnesota

"NO physical examination is complete without a careful examination of the tonsils." Such was the dictum of our Professor in Otolaryngology in Medical School, and such I have found to be increasingly true in general practice.

All too often, examination of the tonsils consists only of inspection. This can be very misleading, as evidenced by the following case:

A girl of nineteen was first seen because of extreme nervousness, insomnia, and restlessness. To use her own words, she was "in hysterics most of the time" and had had a "nervous breakdown" six months ago which kept her in bed for seven weeks. Under the care of several different doctors she had been treated on different occasions with sedatives, glandular products, psychotherapy, et cetera. Her basal metabolic rate was found normal. A catheterized specimen, however, showed albumin 1+ and red blood cells on microscopic examination. Inspection of the throat showed no *apparent* tonsils. In fact she had been told she had none—a statement which you have doubtless all heard from patients before. With the pillar retractor, unusually hypertrophied anterior pillars were pulled back on each side revealing submerged tonsils from which could be expressed large amounts of caseous material. This was repeated daily with rapid and marked improvement in the nervous symptoms and kidney findings. Eventually tonsillectomy was performed and the girl made a very satisfactory recovery from both the nervous and renal complications.

In a family of eleven children, four were seen who on different occasions developed these same peculiar nervous symptoms which ultimately were traced to tonsillar poisoning. Complete relief was secured in all of them by tonsillectomy. All had the submerged innocent-looking type of tonsils hiding behind the same misleading hypertrophied anterior pillars. All the tonsils were found, when exposed with the pillar retractor, to have a large slit in the upper pole which led into a labyrinth of cryptic development. Pus and blood issued with pressure. One of the boys, aged nineteen, was typical of the group; he had been having what was called a "nervous breakdown" for two and one-half months when I first saw him. The same restlessness and insomnia were present as in the case of the girl mentioned above. He had dizziness, vague pains in the head, palpitation, and some semi-convulsive seizures described in his own words as "jerky movements that lasted about an hour." There was no loss of consciousness during these attacks and no family history of epilepsy. The conclusion drawn was that these were choreiform attacks apparently from a neurotropic strain of streptococcus. Removal of the tonsils in due course of time caused complete and permanent cessation of all of these symptoms.

The arthrotropic streptococcus in tonsils is so commonly recognized that no illustration of the

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fact need be made at this time beyond the point that a number of individuals in the fifties and sixties have been seen who developed a severe "lumbago," lame shoulder, or other acute rheumatic disturbance who were ultimately cured by tonsillectomy. I only mention this to assert my belief that *age* is no contra-indication to the operation. Nevertheless, many people in this class hesitate at tonsillectomy. In such cases, it is wise, in connection with other therapy, not to overlook certain cleaning-up-of-the-tonsil procedures which I use almost routinely as preparatory measures to tonsillectomy.

These preparatory or clean-up measures consist first and foremost of expression of the contents of the crypts with the pillar retractor. The pillar is pulled back and the tonsil squeezed firmly between the instrument and the back of the throat until all of the caseous material is expressed. This process usually everts the tonsil from its fossa, causing the crypts to gape open and the purulent material to squirt out. The squeezing motion is made behind the tonsil if possible rather than directly on it, to facilitate this. Frequently some slight bleeding will occur from the inflamed crypts. An exploratory probe passed into these crypts sometimes reveals their amazing depth and size, particularly at the upper pole. Some tonsils in older people are nothing more than a sac, the whole inside being hollowed out and containing caseous material. Frequently the openings to such crypts are stenosed so that no natural drainage occurs. In a case of this type, I have found it useful to slip a cautery point bent in the shape of a hook into the crypt and with the cautery heat turned on gently to pull out on the hook enabling it to burn its way through the tonsil and leave a gaping orifice.

The limitations of such procedures must, however, be recognized and explained to patients. The crypts rapidly fill up after being emptied. It is impossible to sterilize crypts with carbolic acid or cautery or anything else because of their extensive ramifications. The extent of the tonsil-crypt system has been studied recently at Northwestern Medical School by Simonds and his co-workers. Ramifications were found up to the fifth order and the surface area of such crypt systems was computed to be as much as 90 square inches compared to a total surface area of the pharynx of only 7 inches.

Another almost insuperable difficulty is that some tonsils contain abscesses which have no demonstrable outlet through a crypt and cannot be emptied. Fortunately for diagnostic purposes such chronic intratonsillar abscesses are never present without sufficiently marked crypt infection to indicate the need for tonsillectomy. They are frequently unsuspected, however, until the tonsil is sectioned or they are ruptured in the process of tonsillectomy.

A few points of practical value for those who do tonsillectomy should bear mention here. *Always* check up on the bleeding and clotting time in advance. If either is more than three minutes give Vitamin D and some calcium preparation in large doses for a week. This will almost invariably bring both bleeding and clotting times under three minutes and render the blood-loss at the time of operation minimal. If the tonsils contain much infected material, have the patient come in every two or three days, for expression of the material. This cleaning-up process diminishes the amount of chronic inflammation and makes bleeding less likely. This is of paramount importance where kidney or heart symptoms have been traced to the tonsils. A prolonged period of cleaning up with some local application to available crypts diminishes the toxic absorption and hastens the time when operation is safe. And in this regard, it is safe to say that very few operations require better judgment than tonsillectomy in the presence of an early glomerulonephritis, or endocarditis. Another case well illustrates this point:

A young man came in for treatment of headaches which he attributed to a minor head injury sustained in an automobile accident a short time before. Examination revealed a blood pressure of 160/100 with 1+ albumin on urinalysis due to red blood cells and occasional casts. Markedly infected tonsils were found and a history obtained of numerous severe tonsillitis attacks. I started the process of expressing the tonsils every two or three days, contemplating a tonsillectomy only after some length of time when it was certain that his condition would be right for it. This rather slow approach to the problem apparently did not satisfy him as he went elsewhere and had an immediate tonsillectomy. I saw him a month later with four plus albumin, blood, and casts which have persisted ever since. I feel certain that this premature tonsillectomy definitely caused an exacerbation in his case.

In presenting this paper I wish to stress first and foremost the importance of more careful ex-

amination of the tonsils in every routine physical examination. By this is meant at least, retraction of the anterior pillar and firm pressure behind the tonsil to express the contents of the crypts. The pillar retractor should be on the examining tray of every general practitioner for both diagnostic and therapeutic use.

So much for the tonsils, and now just an observation or two about some of the other foci. It has surprised me how little apparent toxic absorption there may be from the maxillary sinus. Several silent infected maxillary sinuses have been discovered from which copious thick pus could be irrigated, that have probably been infected for years without any ascertainable constitutional reactions.

The prostate in men and the cervix in women on the other hand can cause considerable systemic trouble. Several women have been seen with the extreme nervousness and semi-hysterical symptoms described in the above tonsil cases where cautery of a big eroded cervix resulted in cure. Two or three cauterizations at intervals of six weeks were sometimes needed to effect complete healing. For the prostate, treatment has been disappointing. Massage given about every five days for six weeks with three months rest periods has been thoroughly tried. This program seems to give the best results. Elliott treatments have not helped noticeably and intravenous anti-septics only occasionally. Gonococcus filtrate has been tried on patients with a specific history with some benefit.

There appears to be a definite relation between focal infections of the *teeth* and *urinary infections*. Several instances in elderly people have been seen where no local cause in the urinary tract could be found for the persistence of pyuria, but where this cleared up and remained so after removal of infected teeth. This has been noticed to be especially true where pyorrhea of rather marked degree pre-existed.

It is also surprising how often apical abscesses will be found in *young* people if routine x-rays of the teeth are taken whenever a focus of infection is suspected. The not uncommon coexistence of infected teeth and tonsils in the same patient may explain the disappointing results obtained when only one focus is removed.

In regard to removal of infected teeth, I believe the same gradual approach to the problem as in tonsillectomy should be pursued. The gen-

eral condition should be built up; the time for extraction should be selected in a period of remission of the general symptoms; and only a few teeth should be removed at a time, carefully watching for any reaction after each series of extractions. Flare-ups after removal of too active teeth, as you have doubtless all observed, are serious and may so aggravate an acute process as to prove fatal or leave permanent chronic changes.

The occurrence of two or more foci in the same individual is frequently encountered in relation to the infected gallbladder or appendix. One case well illustrates this: A badly diseased gallbladder with stones and pus was removed from a middle aged woman because of repeated severe local symptoms. She continued, however, to complain of attacks of rheumatoid arthritis which she had had for some time before the cholecystectomy. Only later after definitely infected tonsils were removed was any noticeable relief secured. Such combinations are probably not uncommon because there is some evidence that chronic infected tonsils or teeth predispose to gallbladder disease.

Removal of a chronic or interval appendix for relief of focal infection symptoms is apt to be disappointing. As an illustration of this I am mentioning the following case:

A man, forty years old, came in for treatment of a lumbago which had persisted for several months after a slight injury. X-rays of the back gave negative findings. The tonsils were badly diseased but the patient refused local tonsillectomy, largely on the grounds of fear. He gave a history of several mild abdominal attacks which had been diagnosed as appendicitis. X-ray revealed a tender cecum that was fixed and did not fill well. Strangely enough he submitted to an appendectomy willingly. Numerous adhesions about the cecum were found indicating former attacks. Following appendectomy the lumbago gradually disappeared but other joint symptoms kept appearing in increasing severity. One year later tonsillectomy was performed. A chronic intra-tonsillar abscess in the lower pole of one tonsil containing a fluid yellow pus ruptured during the operation. *Fortunately* he has since had complete cessation of all rheumatic symptoms.

I used the term "fortunately" in speaking of the patient's recovery because of the time element in this case. If an active focus of infection is allowed to operate year after year unabated, the relief from its removal obviously cannot be as great as if checked in the beginning. Permanent changes are apt to take place in distant parts

of the body that cannot be undone. Thus as in cancer another heavy responsibility is placed on the general practitioner for *early* diagnosis and treatment.

In conclusion, in choosing the title "Some Observations On Focal Infection," no attempt has been made to cover the subject of focal infection to any appreciable extent or to deal with the lit-

erature on the subject, but merely to present some random observations made in *general* practice. The main point emphasized is that in the *early* detection of focal infections and in the insistence on their proper treatment, the general practitioner can render some of the most valuable service possible to his clientele.

A SIMPLE METHOD OF TRANSFUSION IN INFANTS*

LOWELL C. BARR, M.D.

Albert Lea, Minnesota

ABOUT 1660, Lohr at Oxford University transfused blood from one dog to another by means of a goose quill. Two years later Sir Christopher Wren and Archibald transfused a debauched man with 12 ounces of sheep's blood without fatality. Defibrinated blood, introduced in 1835 by Bishop, proved dangerous and so transfusion has gone through cycles of popularity and discredit. At present, it enjoys a wide confidence as a therapeutic measure in many conditions.

The restoration of confidence is due to simplification of technic and a more accurate knowledge of methods of blood typing. Shattuck in 1899 instituted blood typing and a few months later Landsteiner published a study upon the subject. These observers noted the presence of iso-agglutinins in the serum, according to which individuals could be classified into four groups. According to the Moss classification, 10 per cent of all persons are in group 1; 40 per cent in group 2; 7 per cent in group 3; and 43 per cent in group 4.

In 1898, direct transfusion was popularized by Crile. The convenient citrate method devised by D'Agate of Montpellier, has, on account of frequent secondary reactions, been largely supplanted by the transfusion of typed, unmodified blood.

Transfusion in adults is rather a simple procedure and usually is accomplished without difficulty. The veins are large, and the patients most often coöperate. But in infants and small children the difficulty is that of inserting the needle into a vein and keeping it there.

I wish to call your attention to a method which has been used for some years at the Children's Memorial Hospital in Chicago and perfected by an ex-resident, Dr. M. L. Spivek, who has recently described it.† In this method, the vein is exposed and a thread passed about it with a blunt needle. The procedure is precise and should be attended by only a few failures.

The vein most commonly used is the saphena magna, which runs just anterior to the internal malleolus and then proximally along the inner aspect of the leg. The patient is placed on a comfortable table with the opera-

tor at the foot facing the patient. The extremity is fixed to a splint, which is extremely important to prevent motion and thus dislodging the needle.

This is done by binding the foot to a padded splint, using a board somewhat wider than the leg and reaching from just above the knee to 2 cms. below the heel. This board should be padded well and attached to the lateral aspect of the leg, causing the foot to be externally rotated when the splint is flat on the table. With one-inch adhesive tape, the foot is bound to the board. From well on the underside of the board, the tape is rolled over the heel, along the inner aspect of the foot to the toes. The tape then goes around the back of the splint, arriving at the starting point. From here it goes over the instep and then around the back of the board. A second light and not constricting band is placed around the knee, binding it to the board. If this is correctly done, the fixation of the foot is definite and positive.

If a tourniquet is applied lightly above the knee, the vein will appear just anterior to the internal malleolus. If it fails to appear, slide the finger firmly across the area where the vein is sought and usually one can feel the distended vein snap and roll back under the finger.

When the vein is found, the skin is prepared with iodine and alcohol and the site of the vein is marked definitely by injecting a little 1 per cent novocaine directly over the center of the vein and the needle prick marks the exact location.

Draping is done by using one sterile towel placed on the table under the splint and leg. The second is placed across the leg with one edge just touching the needle mark; and the third parallels the second on the other side of the needle prick.

Towel clips, one on either side of the foot, are used to fasten the towel edges to the splint. The field is then exposed by turning under the edges of the towels.

Next, with a sharp pointed knife, an incision 1 cm. long is made over the vein at right angles to it; not parallel to it. The incision must be made deep enough to reveal the subcutaneous tissue in which the vein lies buried. The tissues are then spread apart and loosened by means of a mosquito forceps inserted perpendicular to the skin and spread in parallel direction to the vein.

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†Spivek, M. L.: Simple method of transfusion for infants and children. *Jour. Pediat.*, 7:199-204, (Aug.) 1935.

The vein lies directly underneath the center of the incision. It is brought up by means of a small forceps and gently underneath the vein and is identified as a listening ribbon on the forceps.

A strand of No. 00 catgut is grasped by the forceps and drawn beneath the vein. Its ends are brought together and caught with a small snap. This strand is used to put tension on the vein in order to facilitate the further steps. A small pair of manicure scissors is used to make a nick in the wall of the vein on its upper surface. A dot of red on the white vein indicates that the lumen has been incised.

The blunt pointed 20 gauge needle is inserted into the prepared vein with the bevel down and it should slide in gently.

The needle is held in place by means of a mosquito forceps, a hole having been drilled through its tip. This is clamped on to the needle where it enters the vein and it serves to steady the needle and also to prevent leakage.

Five or 10 c.c. of normal saline solution may be injected to be sure the needle is in the lumen of the vein.

From this point on any apparatus or system of transfusion desired may be used. When the transfusion has been completed, the vein is not tied. Pressure will control bleeding until one can place a suture to close the wound. A piece of dressing controls the oozing. The same vein can be used again, since it has not been ligated.

THE PRESENT STATUS OF VITAMIN D MILK

The Council on Foods reports that of all the common foods available, milk is most suitable as a carrier of added vitamin D. Vitamin D is concerned with the utilization of calcium and phosphorus, of which milk is an excellent source. The Council has recently made the decision that for the present milk is the only common food which will be considered for acceptance when fortified with vitamin D. The properties of vitamin D may be imparted to milk by irradiation of the milk, by proper feeding of vitamin D preparations to cows and by the direct addition to milk of either natural or manufactured vitamin D concentrates. Clinical evidence of the nutritive value of each form of vitamin D milk is necessary in order to evaluate it properly. Up to Nov. 1, 1936, the Council on Foods has reviewed the evidence and accepted the following types of vitamin D milk: 1. Irradiated fresh (pasteurized) milk (produced under the Steenbrock patent) containing 135 units of vitamin D to the quart, and irradiated evaporated milk containing the same number of units to the reconstituted quart (after dilution with an equal volume of water). 2. Fresh (pasteurized) milk containing a concentrate of cod liver oil (Vitex) with 400 units of vitamin D to the quart, and evaporated milk containing the same number of units to the reconstituted quart. 3. Fresh (pasteurized) milk containing 400 units of vitamin D to the quart, the vitamin D being prepared from ergosterol by a process of activation with low velocity electrons. 4. Evaporated milk containing a cod liver oil concentrate made by the Clo-Dee (Barthen) process and containing 400 units of vitamin D to each 14½ ounces by weight. 5. Various mixtures

designed for infant feeding containing cod liver oil or other sources of vitamin D. Dried milk preparations fortified with vitamin D have also been accepted. To be acceptable to the Council on Foods, bottle caps and labels for vitamin D milks must declare unitage of the vitamin D in terms of U.S.P. units and the source of the vitamin D, unless local governmental regulations prohibit such declaration. For all milks containing a minimum of 135 units, an enhanced nutritive value, especially for growing children, may be claimed; it is also permissible to state that these milks usually will prevent clinical rickets when they are fed to normal infants in customary quantities (from 1½ ounces for each pound of body weight in early infancy and 1½ pints or more daily in later infancy). For milk with only 135 units to the quart there shall be no claim or intimation that an adequate amount of vitamin D is being supplied to infants. When the milk contains as much as 400 units to the quart the claim may be made that the amount of vitamin D is greater than that usually required for the prevention of rickets in normal infants and thus that a margin of safety is offered when customary amounts of milk are taken. The foregoing statements apply equally to evaporated milk after it has been diluted with an equal volume of water. In the advertising of vitamin D milk the implication should not be made that the Council favors the use of any vitamin D fortified milk over the prescribing of other forms of vitamin D for infants or recommends the use of vitamin D milk to the exclusion of an additional supply of the vitamin in some other form. (*J. A. M. A.*, Jan. 16, 1937, p. 206.)

CASE REPORT

HEAT HYPERPYREXIA*

Report of an Extreme Case Surviving for Eight and One-half Days

CORNELIUS A. SAFFERT, M.D.

New Ulm, Minnesota

HEAT hyperpyrexia is the most severe, dramatic, and fatal form of injury due to heat. It is also called heat prostration, thermic fever, heat stroke, or sunstroke.

Symptoms.—The premonitory symptoms consist of a feeling of oppression, occipital headache, throbbing of the temples, vertigo, nausea. Pulse and respiration are rapid. Weakness, fatigue, and colored or dim vision may be present. Thirst is intense, the mouth dry, the tongue furred. Frequency and urgency are present, with but little urine passed. Perspiration, which had previously been free, ceases. Body temperature then rises rapidly and all symptoms become exaggerated. Consciousness is lost abruptly or after a period of confusion or delirium.

Physical Findings.—Coma may be profound. The pupils are contracted and react sluggishly; the conjunctivæ are injected. Respiration is deep, labored, stertorous, and may be of the Cheyne-Stokes type. The pulse usually ranges from 160-180, is of a peculiar running quality, and may be irregular. The temperature may be from 107 to 112 degrees. The deep reflexes are much weakened or absent. The skin is dry and burning hot. Cyanosis of the lips and fingers is present; the face flushed or pale. The muscular system is flaccid but twitchings show up early, and convulsions may occur. The urine is suppressed. Albumen and acetone bodies are common. Involuntary bowel movements may occur with a peculiar foul odor. The breath has a similar odor. In fatal cases the blood shows a progressive increase in non-protein nitrogen; the pulse becomes more rapid, breathing Cheyne-Stokes in type, and pulmonary edema complicates the picture. With recovery, the temperature falls gradually, consciousness returns, moderate fever persists for a few days to two weeks.

Complications.—(a) Relapse is common, especially in continued heat waves.

(b) Cardiac dilatation, with a systolic murmur may be present for some weeks. Pulmonary congestion and bronchitis are present and pulmonary edema is terminal.

(c) The deep reflexes return gradually with convalescence. With return to consciousness, there is an excited delusional state or even delirium, which in severe cases may take several weeks to clear. Difficult

articulation, especially of dentals and labials may be present. Nystagmus, squint, diplopia may occur.

Sequelæ.—Deterioration in mentality, inability to concentrate, and changes in personality may persist. Repeated severe headaches are common, especially with exposure to slightly excessive temperatures. Inability to withstand even moderate temperatures may necessitate change of climate or occupation.

Treatment.—Symptomatic treatment consists in securing the coolest surroundings practicable. Hydrotherapy should be rigorously employed. It is advantageous to use the cooling power of evaporation by stripping the patient, spraying him with tepid water from a fine spray nozzle, and evaporating the water by fans. Evaporation of 1 gram of water removes 590 calories of heat, while melting 1 gram of ice removes only 80 calories. Mortality in large series where evaporation is used is 12 per cent, compared to 33 per cent in series treated otherwise. When the temperature has dropped to 102 further refrigeration should be stopped and the patient placed in dry cool surroundings. As the temperature rises repeat the hydrotherapy. Cardiac stimulation as needed. In laboratory animals caffeine prolonged resistance to death from overheating by 40 per cent over controls. Intravenous saline or saline and glucose is indicated to replace blood volume and loss of salt. After-treatment with careful nursing and neuro-psychiatric care is important.

Case Report

W. H., male, aged fifty-six, weight 230, was a packer in a flour mill. On July 27, 1935, during a so-called heat wave, he was taken to his home after collapsing while at work. On arrival there he was deeply unconscious, and immediately taken to Union Hospital. Examination at 6:45 p. m.—Temperature 109.6 (R); pulse 172, thready; respiration stertorous, rate 40; B. P. 100/0; his color was ashen, skin very hot and very dry. The pupils were pinpoint in size; conjunctival reflexes absent; corneal reflex slightly present. The mucous membranes of the nose and throat were angry red, and very dry. The tongue was parched. There was a peculiar odor to the breath. The heart was very rapid and irregular but no hypertrophy nor murmurs were made out. The chest was filled with coarse and fine moist râles. There was a marked twitching of the face muscles, and occasional twitching of the muscles of the extremities. Deep reflexes were uniformly much diminished, almost absent. Abdominal reflexes were absent. Physical examination was otherwise negative.

Intensive hydrotherapy was immediately instituted, the patient being under an oxygen tent continuously. Cardiac and respiratory stimulants were given. Five hundred c.c. of 10 per cent glucose in saline were given intravenously. By 7:30 p. m. B.P. 104/60. At 7:45

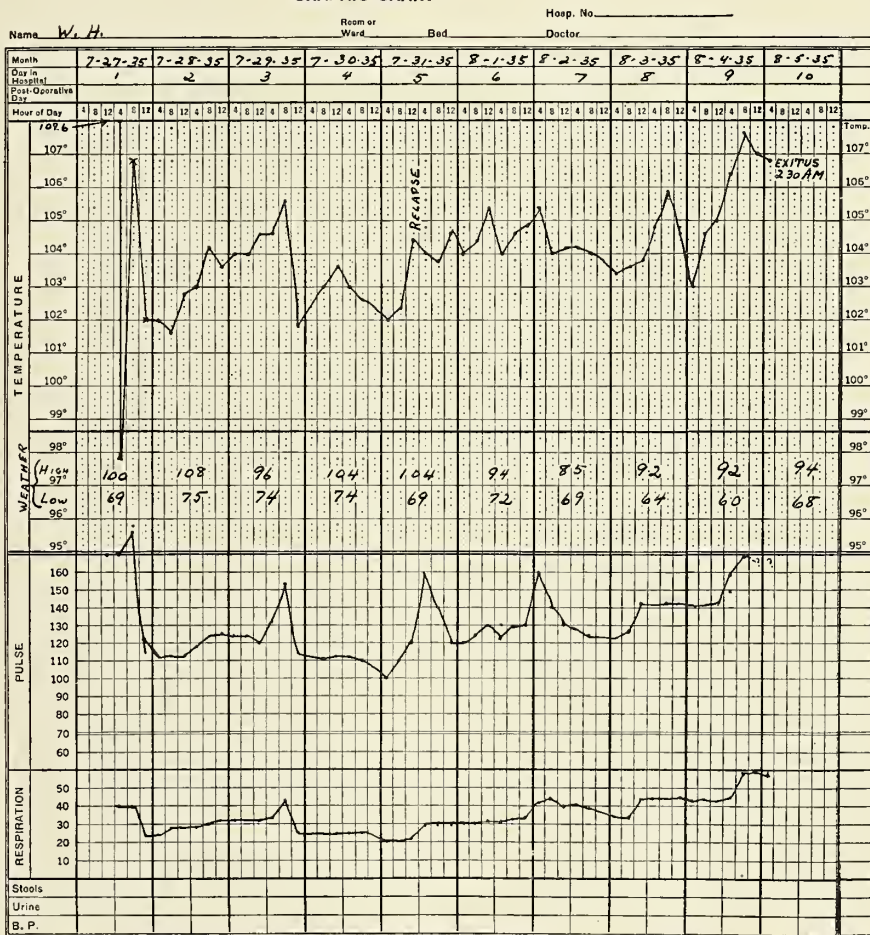
*Read before the annual meeting of the Southern Minnesota Medical Association, Albert Lea, Minnesota, August 30-31, 1936.

CASE REPORT

p. m. his temperature was subnormal and external heat applied. At 8:00 p. m. his temperature was 106.8 (R), pulse 178, respiration 40. Muscular twitching of face was now marked. Hydrotherapy was again instituted. At 9:00 p. m. the B. P. was 122/76. Emesis of a foul

colored, purulent sputum. Cyanosis was moderate and pulmonary edema was made out on examination. Vomiting persisted. Intravenous hypertonic glucose solution was repeated. Urine shows 2 plus albumen, otherwise negative. The red cell count and hemoglobin were nor-

GRAPHIC CHART



brownish fluid occurred at intervals. By 11:30 p. m. the temperature had dropped to 103; pulse 114 and of good volume; respirations 24, less stertorous. The pupils were very dilated and the patient still in deep coma.

July 28, 1935.—Oxygen and other stimulants had been continued during the night. Temperature remained about 102, pulse 114, respiration 38. Retching and vomiting of foul brownish material continued at intervals. Patient still in deep coma, respirations shallow, irregular, at times Cheyne-Stokes in type. Color is pale. Temperature gradually rose to 104.2 by 8:00 p. m. with pulse and respirations slightly more rapid, cyanosis more marked. Pupils at times were pinpoint, at times dilated, reacting to light normally. Coughing occurred at intervals.

July 29, 1935.—During the night respirations were quite labored and stertorous. The morning temperature was 104, pulse 120, respiration 32; B. P. 106/86. Coma was not quite as profound but there was marked restlessness. Coughing was severe with raising of a rust

mal. W. B. C. 18,050 with 88 per cent P. M. N. During the afternoon temperature rose to 105.8, pulse 142-154, respiration 42-46, shallow and stertorous. Continued extreme heat combined with the findings of pulmonary edema make the prognosis grave. Patient could not be aroused from coma. Following vigorous hydrotherapy and much stimulation, temperature by 10:00 p. m. had dropped to 101.8, pulse 116 (weaker), respiration 32, very shallow, at times of Cheyne-Stokes type. Pulse weakness responded to caffeine sodium benzoate.

July 30, 1935.—At 2:30 a. m. the patient asked for a drink. This was the first evidence of returned consciousness. He talked rationally for a moment. At 3:00 a. m. he tried to get out of bed, and wanted to return to work. He took water freely; expectorated a rust colored purulent sputum; voided normally. In the morning he was conscious but mumbled a great deal and was very difficult to understand. The tongue was very parched and black. Mucous membranes of nose and throat continued very dry and injected. Pupils reacted to light. Blood pressure was normal. Deep re-

CASE REPORT

flexes seemed to be returning. Blood chemistry showed an increase of urea and non-protein nitrogen. Chest still showed diffuse fine and coarse moist râles. Heart was regular. Temperature 103.6, pulse 112, respiration 26. By evening the temperature was about the same but there was more restlessness and some mental confusion present. Vomiting persisted and a great deal of flatus was expelled.

July 31, 1935.—Temperature this date ranged from 102-104.6, pulse 100-158, respiration 20-28. Pupils were normal in size and reacted normally. Mucous membranes of nose and throat looked somewhat better. Pulse was of good quality but respirations were still shallow at times. Chest examination still indicated pulmonary edema. Mentally he was fairly clear. The condition was improved until 9:30 a. m. when he suddenly became worse, becoming very confused and restless, picking at the bedding a great deal, mumbling incoherently and unintelligibly. He became violent at times and tried to get out of bed. He was somewhat cyanosed, the skin very hot and dry. The patient apparently had a relapse. Pulse weakness was pronounced, rate 158. Restraint had to be applied because of extreme restlessness. Patient became irrational, responding very poorly. Cough with expectoration of rust colored sputum continued, as well as vomiting. Treatment has included oxygen and carbon dioxide inhalations, caffeine and other stimulants, intravenous hypertonic glucose, intensive hydrotherapy.

August 1, 1935.—The pulse was weak at times during the night, responding, however, to caffeine. Breathing was shallow, the skin still hot and dry. The patient was restless, confused, mumbled unintelligibly, and was involuntary. The deep reflexes were less active. B. P. 154/86, temperature 104.4, pulse 128, respiration 30. Tongue and mucous membranes were parched; the cyanosis more marked. The heart was regular, the chest findings as before. Urine showed less albumin. The white blood cells numbered 14,950, 86 per cent pmn. Blood chemistry: urea 84 mgm., uric acid 13 mgm., non-protein nitrogen 201.1 mgm. per 100 c.c. By noon the temperature was 105.4, pulse 130, respiration 32, and he was extremely restless. Marked bladder distention required catheterization, the urine showing 3 plus albumin and 20-25 r.b.c. per high power field. At 5:00 p. m. venesection of 250 c.c. was done, and 25 c.c. of 50 per cent glucose administered intravenously. The mental condition remained unchanged.

August 2, 1935.—There was no response to venesection. During the night the temperature rose to 105.6, pulse 160 (irregular). Respirations were 42, labored, shallow, at times of Cheyne-Stokes in type. He rested only three hours. The sclerae were jaundiced, the pupils reacted to light. Patient talked a great deal and was rational only at intervals. Purulent sputum was still raised. The tongue was parched, the mucous membranes dry and injected. The lungs showed more râles than the day before. A marked systolic murmur was heard this date over the entire precordium. Liver and spleen were not palpable. Catheterization was again required. During the morning he again had pulse weakness with marked cyanosis with only slight response to cardiac stimulation. He was comatose at in-

tervals. The skin again became moist, followed by profuse sweating. By evening the pulse had improved. Swallowing had become slightly easier and the patient was rational at times, but has spells of extreme restlessness. Urinalysis today showed less albumin but considerable bile. Temperature 104, pulse 124, respiration 38, throughout the night.

August 3, 1935.—Patient had a fair night. Breathing remained shallow at times and the pulse tended to be weak. While his color was better the jaundice of the sclerae remained the same. B. P. 118/76. Mucous membranes were still parched. He was mentally clear at intervals with confusion and marked restlessness at times. The pulse was of good quality. The heart still showed a bruit over all the valves. Fine and moderately coarse râles persisted throughout the chest, more marked at the right base posteriorly. Abdominal distension was less but catheterization had to be repeated. Patellar, biceps, and triceps reflexes were present on both sides. Late in the day there was increased restlessness, the pulse became weaker and somewhat irregular. There was moderate cyanosis. The blood showed moderate reduction in the retention of metabolites. There was a direct immediate reaction to the Van der Bergh test, interpreted as indicating obstruction of the bile passages due to swelling. Granular casts were present for the first time in the urine. 8:00 p. m.: temperature 105.8, pulse 142 (irregular), respiration 44.

August 4, 1935.—Temperature this date was 104.6. Cyanosis was more marked and the patient was very restless and did not recognize people. Breathing was stertorous, the heart very irregular. Catheterization had to be repeated. Twenty-five c.c. of 50 per cent glucose was given intravenously. Oxygen was administered constantly, other stimulants being continued. Restlessness was extreme and the patient had a very stormy day. Despite vigorous hydrotherapy, at 6:30 p. m. the temperature was 106.4, pulse 160, respiration 44. About the middle of the afternoon the legs began to swell, the left leg becoming very swollen and cyanosed. Delirium developed, the pulse gradually becoming weaker. Râles in the chest were increased, markedly in the dependent portions of the lungs. The neck showed moderate rigidity, the pupils being widely dilated, reacting poorly to light. At 9:00 p. m. the temperature was 107.6, respiration 56, pulse too thready to count. The entire left leg was very cyanosed and very swollen. The chest was completely filled with coarse moist râles. The patient was deeply comatose and death was imminent.

August 5, 1935.—Exitus lethalis at 2:30 a. m. on the tenth day of the illness. Permission for postmortem examination could not be obtained.

Comment.—The unusually long survival of a thermic fever victim allowed a detailed clinical study which is here presented. The clinical picture can be interpreted on a basis of a severe edema of the brain, and a marked cloudy swelling of the kidneys, liver and myocardium. Terminal events were thrombosis in the lower extremities and pulmonary edema.

EDITORIAL

MINNESOTA MEDICINE

OFFICIAL JOURNAL OF THE MINNESOTA STATE MEDICAL ASSOCIATION

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EDITING AND PUBLISHING COMMITTEE

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BUSINESS MANAGER

J. R. BRUCE, Saint Paul

Volume 20 FEBRUARY, 1937 Number 2

A. M. A. Fellowship

EVERY physician who lays any claim to being well posted in medical matters should be conversant with the material that appears each week in the *Journal of the American Medical Association*. There is no journal that is more often referred to in medical writings and no journal that covers a wider field than our national journal. The editors of certain state medical journals rather assume that their readers are conversant with the material that appears in our national journal and try more or less to avoid duplication in material published. Whether such an assumption is justifiable is open to some question.

According to the Minnesota State Board of Medical Examiners there were 3112 licensed

physicians residing in the state in 1936 and 628 additional licensed non-residents. Of these 2202 were members of our county societies and automatically members of the State Medical and the American Medical Associations. Of these state members 1412 are Fellows of the American Medical Association and receive the *Journal of the American Medical Association*. Undoubtedly a certain number of our state members subscribe to the *Journal of the American Medical Association*, but are not classed as Fellows.

When a state member subscribes to the *Journal of the American Medical Association* and pays the subscription fee of \$7.00, this does not make him a Fellow. This fact is not generally understood. A member who subscribes to the national journal and who is not classified as a Fellow may apply to the national headquarters for a Fellowship. There are certain advantages in a Fellowship when it comes to attending and taking part in the scientific sessions of the American Medical Association and on moving from one state to another. If you are uncertain as to your status, consult an American Medical directory.

No part of a member's county or state dues goes to the American Medical Association. The only financial support one can give to the national organization is by subscribing to the *Journal of the American Medical Association*. If you are a county member and subscribe to the *Journal of the American Medical Association*, you should also become an American Medical Association Fellow.

Social Security Laws

THE enactment of the Social Security laws entails an enormous amount of work for federal and state departments and it is likely

to take some time before the wheels of government run smoothly. In the meantime a brief explanation of how the law affects physicians as employers may be worth while.

There are two distinct laws—one concerning the federal old age benefits and the other for federal-state unemployment compensation. Both concern the physician as employer of one or more office assistants.

The federal old age tax is entirely federal and is paid monthly to the Collector of Internal Revenue and is a 1 per cent tax on employer and employee, but is paid by the employer whether he deducts the employee's share from her salary or not. In case two or more physicians employ the same stenographer, but are not in partnership, the rather cumbersome method of making out a separate return by each physician on the quadruplicate form supplied is necessary if the physician wishes to claim exemption on his income tax for salary paid. Separate checks are sent to the Collector of Internal Revenue during the month following the month for which the salary was paid. The first installment is, therefore, payable in February for salaries paid in January, 1937. Each sheet of the return must be signed by two witnesses if the amount is less than ten dollars.

The unemployment tax, as far as the physician who employs less than eight assistants is concerned, is paid in Minnesota to the State Unemployment Compensation Division of the Industrial Commission. Returns are to be made quarterly on forms to be supplied by the State, in March. If the employees number less than eight, no tax is payable for the year 1936, but applies only to 1937. The tax is 2 per cent of the payroll in 1937 and is to be paid entirely by the employer. In the case of eight or more employees, 90 per cent of the tax is payable to the State Commission and 10 per cent to the federal internal revenue office. In case of fewer than eight employees only the 90 per cent of the 2 per cent of the payroll is to be paid to the State, the 10 per cent being omitted. In case several physicians employ the same assistants, the same rule applies as to the filing of separate returns by each physician.

Both taxes apply to one or more employees, but do not apply to domestics or agriculture

laborers. Nor does the old age tax apply to employees over sixty-five years of age.

It is particularly emphasized that each month each employer must present each employee with a statement in written form of some kind as to the amount subtracted from his or her salary for the old age tax.

Catastrophes of 1937

The start of the new year is anything but propitious. It is hoped that the incidence of influenza which has reached epidemic proportions has reached its peak and is subsiding. Each year brings a certain number of cases of influenza but not in epidemic form. It is said that the epidemic this year is not as severe as it was in 1922, 1923 and 1929, but is more severe than in 1926 and 1933. Certainly the complicating pneumonia has not made itself as conspicuous as it did in 1918, at least in Minnesota. As to the real status of the epidemic, one is forced to rely on impressions as cases are not reported.

Much discussion is heard as to the nature of the present epidemic. Whether the term "influenza" is used or the French name "la grippe" or the more popular appellation "flu" is immaterial. In our opinion the infection is the same although it varies much from year to year in incidence and severity. Little can be done to prevent its spread and the influenza bacillus is not firmly established as the etiological factor.

The importance of the influenza epidemic fades into insignificance in comparison with the flood raging in the Ohio river basin. As we go to press the high water peak has not been reached. The suffering caused the half million left homeless and the loss of property is incalculable. The public health phases of the catastrophe will be important and we are fortunate in having an organization like the Red Cross ready to assist.

These misfortunes cannot be prevented. What shall we say of the shipping and General Motors strikes? Far be it from us to pass on the justice of the present labor disputes. The suffering which the innocent are forced to share, however, is man-made and preventable.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

Northwest Conference

EVERY physician who is interested in the social and economic relations of medicine—particularly medical society officers and committee chairmen—is urged to attend the Northwest Medical Conference scheduled for Sunday, February 14, at the Palmer Hotel in Chicago.

Sessions will begin at 9:30 a. m. and continue throughout the day with a luncheon for which the Iowa State Medical Society will act as host.

An important and comprehensive program by leaders in medical affairs from all over the Northwest and Middle West states has been arranged. It is printed here complete in the hope that a large representation from Minnesota will attend. Dr. W. F. Braasch, Rochester, chairman of the Committee on Medical Economics, is president of the conference, and will preside at all sessions.

Northwest Medical Conference

Palmer House
Chicago, Illinois

Sunday, February 14, 1937

8:00 a.m.—BREAKFAST—8:00 a.m.

Informal Discussion. Questions to be written and handed in—assigned to individuals for discussion.
Election of Nominating Committee

Morning Program

9:30 a.m.

President W. F. Braasch, M.D., Rochester, Minnesota, presiding

Postgraduate and Economic Education

SYMPOSIUM ON POSTGRADUATE EDUCATION:

- 9:30—Report of Survey—R. L. Sensenich, M.D., South Bend, Ind.
9:50—University Courses—Harold S. Diehl, M.D., Dean, University of Minnesota Medical School, Minneapolis, Minnesota.
10:00—Refresher Courses—M. H. Rees, M.D., Dean, University of Colorado School of Medicine, Denver, Colo.
10:10—Formal Local Courses—S. D. Maiden, M.D., Council Bluffs, Iowa.

- 10:20—Interstate Postgraduate Courses—Jas. D. McCarthy, M.D., Omaha, Nebraska.
10:30—Clinic Courses—Herman H. Riecker, M.D., Ann Arbor, University of Michigan.
10:40—Discussion led by—Ralph R. Wilson, M.D., Kansas City; M. C. Smith, Executive Secretary, Nebraska State Medical Society, Curtis, Nebraska.

SYMPOSIUM ON MEDICAL ECONOMICS:

- 10:55—Economic Education—E. J. Carey, M.D., Dean, Marquette University School of Medicine, Milwaukee, Wisconsin.
11:15—Economic Education of the Medical Student—Wm. J. Burns, Executive Secretary, Michigan State Medical Society, Lansing, Michigan.
11:25—Economic Education of the Doctor—E. S. Hamilton, M.D., Kankakee, Illinois.
11:35—Discussion led by—C. F. Kemper, M.D., Denver, Colorado, T. F. Thornton, M.D., Waterloo, Iowa.
11:50—Greetings from the American Medical Association—Olin West, M.D., Secretary, Chicago.
12:05—Hospital and Health Insurance—James L. Smith, M.D., Peoria, Illinois.
12:20—Discussion led by—John R. Neal, M.D., Springfield, Illinois; Carl F. Vohs, M.D., St. Louis, Missouri; T. A. Hendricks, Executive Secretary, Indiana State Medical Society, Indianapolis.

Luncheon

12:30 noon

Guests of the Iowa State Medical Society
Remarks by President W. F. Braasch
Election of Officers for 1938.

Afternoon Program

2:00 p.m.

SYMPOSIUM ON SOCIAL SECURITY ACTIVITIES:

- 2:00—Survey of Activities of State Governments and State Medical Societies—Chas. S. Nelson, Executive Secretary, Ohio State Medical Society, Columbus, Ohio.
2:30—Maternal and Child Welfare—Alfred W. Adson, M.D., Mayo Clinic, Rochester, Minnesota.
2:45—Public Health Services (Resettlement Administration)—A. D. McCannel, M.D., Minot, North Dakota.
3:00—Discussion led by—S. E. Gavin, Fond du Lac, Wisconsin.
3:30—Venereal Disease Program—Arthur D. Gray, M.D., Topeka, Kansas.
3:45—Discussion led by—Paul A. O'Leary, M.D., Rochester, Minn.; Earl Whedon, M.D., Sheridan, Wyoming.
4:00—State Boards of Health—Frank Jirka, M.D., Director of Public Health, Springfield, Illinois.
4:15—Discussion led by—Philip Kreuscher, M.D., Chicago, Illinois; J. F. D. Cook, M.D., Langford, South Dakota.

President's Message

Each year brings new medical problems. The one that concerns us most at present is the care of the near indigent and the indigent patient. Numerous well meaning philanthropic individuals and social agencies are attempting frequently to solve these problems without conferring with medical men and women. We as practitioners of medicine have always assumed this responsibility; but with the ever increasing number of indigent patients, find the load too heavy. Therefore, local, state and federal aid is necessary. I am sure that each one of us is only too willing to contribute his share of charity, but it is also our duty to acquaint individuals, state legislators, social agencies and welfare boards of the local medical needs and assure these groups that members of the county medical societies stand ready to coöperate in order that all those who need special aid will receive adequate medical care, since we physicians know our patients and are therefore in a better position to advise about medical measures than non-professional social workers.

A. W. ADSON, M.D.

Minnesota's New Deal

There is a new note in the message that was delivered to the Legislature by Minnesota's new governor, the Honorable Elmer A. Benson.

It is a note of assurance born of the apparently overwhelming acceptance—if votes are an indication—of the basic political philosophy that inspired it.

Governor Benson believes that government may properly finance any needed welfare activity for the people. In his opinion, the November election abundantly proved that the vast majority of the people of the United States and Minnesota agree with him.

Today's Question

The question now is simply: What are the needs of the people? How can government raise sufficient taxes to supply them?

The position of Organized Medicine in this new philosophy of government is not reactionary or, in any real sense, opposed.

Physicians, in their organization, are not concerned with philosophies of government. They are concerned solely with the maintenance of high standards for the medical care of the sick and with the protection against exploitation of any sort for those who provide that care.

All Will Agree

Interference between doctor and patient; interference with the freedom of the doctor to prescribe according to the needs of the patient; interference with the maintenance of professional standards and with post-graduate education of the doctor: All these are definite concrete evils which all physicians will oppose heartily. But these are evils that all thoughtful person will see and oppose, also, regardless of their "rightism" or their "leftism" in America.

These identical evils have been observed in most of the European countries where government paid-for-welfare aids have been extended as a compulsory measure, to large numbers of people. Where any similar changes that may lay a basis for such undesirable conditions in America may be proposed, Organized Medicine may be expected to oppose them vigorously.

No such sweeping changes are proposed in the governor's message, however, nor is there any rumor abroad that such changes are contemplated on Capitol hill.

Doctors Must Help

Governor Benson's New Deal message for Minnesota touches upon many matters, however, that are closely related to medicine. The entire message should be studied by physicians. Physicians must be ready to step in and assist, wholeheartedly doing their share to carry out the intentions of the governor and the Legislature and watching carefully that all provisions related in any way to care of the sick or to protection of health shall be consistent with the high standards of the profession and with the policies of the profession in Minnesota.

"We have undergone a great transformation in our attitude toward government and the things we expect government to do for us," said the governor significantly in this message. "Government is no longer a mere huge policeman, protector of the rights of private property; it is now the guarantor of social and economic justice and security for all the people."

Co-operatives

Among the matters of especial interest to doctors in the message were the following:

1. Assistance to coöperatives of every description.

"You should be liberal," said the governor, "in the appropriations to the department of agriculture in its

activities relative to coöperatives. I recommend a change in the coöperative law in order to permit coöperatives a greater latitude in the purchase of stock in other corporations. . . ."

2. Legislation to make Workmen's Compensation compulsory on all employers.

"The files of the state Industrial Commission reveal that there are about 320 awards of compensation totaling approximately \$360,000 which have not been paid to injured workmen or their widows and dependents because the employers carry no insurance and were themselves financially irresponsible. . . . You should increase compensation benefits generally. . . . Consideration should be given by you to the proposal for a state fund for workmen's compensation."

3. Liberalization of the garnishment law.

"I recommend liberalization of the present garnishment law so that all the wage earner possesses is not covered in the garnishment proceedings."

For Health

4. Health and recreational services.

"I urge consideration of expansion of educational facilities for unfortunate people suffering any kind of handicap. I urge . . . appropriations in the general field of health and recreational services sufficient to enable the department of education adequately to carry on a real program."

5. Department of Public Welfare.

"All public services, with the exception of supervision of public institutions under the State Board of Control, should be centered in a new department of public welfare. This would include administration of public aids under the social security act such as old-age assistance, assistance to dependent children, aid to the blind, as well as general home relief. It would call for the coöperation of the various counties through establishment of county welfare boards which would administer social assistance and treatment under the supervision of the state department."

Social Security Grants

6. Legislation that will enable Minnesota to qualify for all federal grants under the Social Security Act.

"Passage by congress of the federal social security act meant that the government recognized its obligation as guarantor of the social and economic security of the people. The standards which the law sets are still far from desirable but at least it is a beginning."

"Bills must be introduced at this session whose passage will qualify the state to receive federal grants pertaining to aid to dependent children and aid to the blind."

7. Old-Age Assistance.

"The special session called by Governor Olson passed the old-age assistance act to enable the state to qualify for federal assistance. I recommend more liberal allowance so that our old folks can enjoy at least a measure of comfort." (*Medical, dental, hospital and nursing care in excess of the stipulated assistance was allowed in the first bill.—The Editors.*)

8. State Veterans' Bureau.

"I recommend that you establish a veterans' bureau which would have the function of supervision of the soldiers' home, organizing general home relief and assistance to veterans and their families."

The President's Department of Social Welfare

The Board of Trustees of the American Medical Association went on record recently as opposed to a federal department of social welfare that should include, under the control of a layman, all health activities of the federal government.

Subsequently an editorial appeared in the *Journal of the American Medical Association* urging all physicians to call the attention of legislators to this action of the board and to the desirability of maintaining the separation from and independence of health activities from general welfare work.

The president made his recommendations based upon the studies of committees of the Senate and the House on Tuesday, January 12.

New Recommendations

The recommendation called for "a department of social welfare which is to advise on social welfare problems and *also to administer federal health, education and social activities*; to conduct research in these fields; to administer federal grants, if any, for such purposes; to protect the consumer; to conduct federal aspects of federal-state programs of social security; to administer all federal eleemosynary, corrective and penal institutions and to administer probation and parole."

So ran the news report. This is the time, while the president's recommendation is taking legislative form, for members to voice their views to their representatives and senators.

In Minnesota

The House of Delegates of the Minnesota State Medical Association went on record last May as definitely opposed to any reorganization of welfare in Minnesota that should call for the merging of the State Board of Health with other agencies under a general Board of Public Welfare.

Thus far no suggestion of any such undesirable change has been made in Minnesota.

There are a number of different proposals for the necessary reorganization of relief and welfare work now being considered on Capitol hill. Governor Benson, in his message, proposed a State Board of Public Welfare (see above), with counterparts in each county to administer county welfare work. Neither the governor's nor alternative proposals provide for the inclusion of the State Board of Health in the reorganization.

Distinguished Record

Minnesota's Board of Health has proved itself, over a long period, a progressive, responsible, effective agency. Its accomplishments have been distinguished and its administration has offered no cause for the reformers to offer suggestions for change.

Reorganization of many other departments of public welfare in Minnesota are undoubtedly needed to avoid duplication and waste.

Wanted: Survey Volunteers

A letter, sent recently to virtually the entire membership of the Minnesota State Medical Association, constitutes the first step in preparation for the Council's study of the costs of medical practice in Minnesota.

This study was ordered by the Council at its December meeting at the recommendation of a committee comprised of Dr. W. W. Will, chairman, Dr. A. W. Adson and Dr. E. A. Meyerding. The committee was enlarged to include Dr. H. S. Diehl, dean of Medical Sciences, and Dr. T. H. Sweetser, chairman of the State Health Relations Committee, for conduct of the study.

Object: To secure reliable figures over a period of at least a year, based upon actual bookkeeping, to show beyond a doubt just the cost of medical practice.

Importance Grows

The importance of securing such figures grows with each move toward reorganization of medical practice for the indigent as well as for other groups.

The letter which clearly outlines the Council's purpose is printed below.

It is hoped that a representative group of physicians from every part of the state will volunteer for this work.

January 20, 1937

To: Members of the Minnesota State Medical Association

Dear Doctor:

Changes in our system of medical practice are much discussed these days.

Medical care for the indigent is being reorganized and health insurance, as a fourth factor in the administration's social security program, threatens.

In these circumstances, it is of the utmost importance to physicians to know definitely just how much it costs them to practice medicine—the cost of a medical education and of adequate post-graduate education, of office overhead, transportation, expert assistance.

Tendency to Reduce

The tendency on the part of official agencies, welfare workers, etc., is naturally to reduce fees to the lowest possible figure.

The doctor, for his own protection, for the maintenance of professional standards and for the welfare of the public, must maintain fees at a level that will permit him to maintain his standards of practice, to continue his education and to maintain himself and his family with reasonable security and in a proper standing in the community.

Exact Figures Needed

To protect medical fees, it will be absolutely necessary to have exact figures on costs—figures which are now lacking in spite of all the voluminous studies of medical care that have been piled up in the last few years.

The Council wishes to secure such figures for Minnesota and these figures cannot be secured through a brief "survey," however well organized.

They must be compiled over a long period of time, a year preferably, and by persons who have a sincere and honest interest in the work.

Appeal to Members

We are accordingly making an appeal to the membership for volunteers to do this work. We are asking for representative members in all parts of the state to volunteer to keep a careful record of all the costs of their practice for the period of a year to this end. It may require changes in bookkeeping and considerable sacrifice of time and effort on the part of the volunteers.

The information is greatly needed, however, and the final result, we are convinced, will be worth every effort it costs for the protection of our profession and the practice of medicine in the United States. Specific instructions and assistance will be sent promptly to any who volunteer to do this work.

It is our earnest hope and belief that many of our members will gladly undertake this work. The infor-

nation that only they can secure is needed equally in the urban and the rural districts, in the sparsely settled regions of the North and the closely settled farming country of the southern counties.

Sincerely yours,

W. W. WILL, M.D., *Chairman*

A. W. ADSON, M.D.

E. A. MEYERDING, M.D.

T. H. SWEETSER, M.D.

G. A. EARL, M.D.

H. S. DIEHL, M.D. (ex officio)

R. R. ROSELL (ex officio)

NOTE: Address all correspondence to Dr. E. A. Meyerding, 11 West Summit Avenue, Saint Paul, Minnesota.

Persistence Will Win

(Monthly Editorial by the Medico-Legal Advisory Committee)

"We are in the midst of a great revolution, passing from a period of extremely individualistic action into a period of associational activity," said former President Hoover some years ago.

We of the medical profession, if we study the social trends at all, must concur with him in this opinion. Beset by state medicine and all of its problems and the possible dire results to individualistic efforts, we must look to associational activity to gain the results we seek.

It is combined persistence that wins. Cato did not destroy Carthage by saying, "Carthage must be destroyed" once, but by saying it many times until he aroused the mighty Roman Empire to combined effort. Then Carthage was destroyed.

Cyrus W. Field made seven attempts at laying the Atlantic cable, but before he was successful, he must have spent much effort in convincing his associates of its feasibility.

Babe Ruth needed eight players to help him win games for his team, all coördinating as a machine to make his efforts count for all.

Your Medico-Legal Advisory Committee believes that if each member of our association will do his individual part, the combined whole will be successful. By a careful study of human nature, by sincerity of purpose and a genuine use of tact and honest judgment together with the writing of good records, on the part of all of us, the malpractice menace can be abated and eventually solved to a large degree.

Certainly properly regulated individualistic effort will make for the further security of the association in the state's economy.

County Officers' Conference

County officers, committees, the Council and interested members will hold their annual County Officers' Conference at the Lowry hotel Saturday, February 27.

This meeting affords the one opportunity of the year for secretaries and presidents and committee chairmen from all of the county and district medical societies to discuss mutually, the problems of medical organization. It also gives them a unique opportunity to carry back to their members reports of recent economic developments and plans for the future.

The morning program for the 1937 session is to begin with round table breakfast conferences for which officers and members from all the various councilor districts will be grouped for individual councilor district conferences. These breakfast conferences have been a satisfactory feature of a number of previous meetings and, incidentally, arrangements have been made with the hotel to have the tables round in fact, as well as in title, so that discussions in the various groups can be heard and shared by all. Matters of especial interest to officers of the individual societies will occupy all of the morning session.

The afternoon will be devoted to addresses by various state and federal officials who are directly concerned in the social security and the relief programs of the state.

All Members Invited

Contemplated changes in the organization of welfare work in general and in the administration of the government's social program intimately involve the medical profession. Upon the readiness of physicians to work with state and county administrators to organize proper and lasting systems of medical care depends the future of medical practice in Minnesota and the United States.

All members are urged to attend this conference and participate in discussions. All expenses of one representative from each county and district medical society will be paid. All others who attend will be guests at luncheon of the state association.

More Deaths In England

It is of interest to note a recent article by Frederick L. Hoffman, LL.D., published in *The Weekly Underwriter*, in which he gives comparative vital statistics in England and in the United States. The incidence of most diseases was considerably higher, in many cases twice as high, in England as in the United States. Further, the improvement in the situation during the past decade was much greater in our country than in England. In many instances the rate increased in England while it decreased in this country. He makes the following notations:

"In the diseases thus far reviewed, it is therefore shown that with only two exceptions the rate was higher in England. The rate of mortality decrease is greater in this country than in England and it may be recalled that the original Act starting health insurance stated that it was 'an Act to provide for insurance against total loss of health and the prevention and cure of sickness, and for purposes incidental thereto.'

"As regards the prevention of sickness it is shown that of the diseases enumerated, most come under health insurance practice as a matter of routine experience, with much more favorable results shown for this country than for England and Wales."

No Better Test

"There is no better test than the comparative mortality figures of these two countries to illustrate the contrast between panel practice on the one hand and private medical practice on the other. The test is absolutely fair and reveals the superiority of health conditions in this country for a large majority of the wage earning element, a large proportion of which receives medical treatment free of charge. To impose a system of health insurance upon our wage earners would merely diminish their income and reduce their surplus which otherwise would go toward maintaining the American standard of life."

Our Next Meeting—Indications For Success

Interest in a medical meeting can fairly be measured by the promptness and eagerness with which commercial exhibitors engage and pay for exhibit space at the meeting.

The reason is not, of course, that commercial exhibitors are super-sensitive to the scientific excellence of a program; they are, however, very sensitive to attendance records and the interest displayed by doctors, nurses and others who attend medical meetings.

Each year the commercial exhibit section of the Minnesota State Medical Association's Annual Meeting has expanded materially over that of the previous year; but the increase for the 84th Annual Meeting to be held at the Saint Paul Auditorium May 3, 4 and 5, is so extraordinary that it is worth noting in these columns.

Exhibit spaces already engaged and paid for amount to the astonishing number of sixty-two. There are still several months before the meeting and there is a good prospect of selling many more.

A unique program comprising, not only distinguished scientific sections, but a day devoted exclusively to the first Northwest Industrial Medical Conference ever held under state association auspices, and another day—long series of sessions on the social and economic relations of all the professions associated in healing under the auspices of the Congress of Allied Professions. The importance of this last series of sessions cannot be overestimated in view of the rapidly changing face of our social organization. Famous representatives of the administration at Washington as well as medical men of national reputation will be present for the meeting.

REVISED CONSTITUTION

THE following Revised Constitution and By-Laws are to be voted upon in their final form at the Annual Meeting in May. If they are passed at that time, they will go into effect immediately.

ARTICLE I—NAME OF THE ASSOCIATION

The name of this organization is the MINNESOTA STATE MEDICAL ASSOCIATION.

ARTICLE II—PURPOSES OF THE ASSOCIATION

The purposes of this Association are to bring into one compact organization the entire medical profession of the State of Minnesota and to unite with similar societies of other states to form the American Medical Association; to promote the science and art of medicine; to elevate the standard of medical education; and to promote public health.

ARTICLE III—COMPONENT SOCIETIES AND COUNCILOR DISTRICTS

Section 1. The membership of this Association shall be organized into county and district medical societies. The functions of each such society and its relation to the Association shall be defined in a charter issued to the Association. Every charter so issued shall be subject to amendment and to revocation by the Association in such manner as may be prescribed in the By-Laws of the Association.

Sec. 2. A component county society is an aggregation of members of this Association living in one county.

Sec. 3. A component district society is an aggregation of members of this Association living in such districts as to make the organization of individual county societies inadvisable, or an amalgamation of two or more counties.

Sec. 4. The House of Delegates may provide for the organization of such councilor districts as will promote the welfare of the Association, such districts to be composed of component societies.

ARTICLE IV—COMPOSITION OF THE ASSOCIATION

This Association shall consist of active, affiliate, honorary, and associate members, who conform with the provisions for such membership as hereinafter provided in the By-Laws.

ARTICLE V—HOUSE OF DELEGATES

The House of Delegates shall be the governing body of the Association, and shall consist of the delegates elected by the component societies to represent them. The following shall have the privileges of the floor, but without the right to vote: the President, the President-Elect, the Councilors, the Secretary, the Treasurer, the Past Presidents, and the Delegates to the American Medical Association.

ARTICLE VI—COUNCIL

The Council shall be the executive body of the Association. The Council shall have the full authority and power of the House of Delegates between Annual Sessions, unless the House of Delegates shall be called to special session as provided for in the By-Laws. The Council shall consist of the Councilors and ex-officio but without the right to vote, the President, the President-Elect, the immediate past President, the Secretary, the Treasurer, and the Speaker of the House of Delegates. A majority of the Councilors shall constitute a quorum.

ARTICLE VII—ANNUAL SESSIONS AND MEETINGS

Section 1. This Association shall hold an Annual Session, during which there shall be held General Meetings, which shall be open to all registered members and guests.

Sec. 2. The general time and place for holding each Annual Session shall be fixed by the House of Delegates, provided that the exact date of the Session may be fixed by the Council.

Sec. 3. Special Meetings of either the Association or the House of Delegates may be called by the President on a two-thirds vote of the Council or upon petition by twenty delegates representing at least ten component societies.

Sec. 4. All Meetings of the Council may be called by the Chairman of the Council or upon petition by three Councilors.

ARTICLE VIII—OFFICERS

Section 1. The officers of this Association shall be a President, a President-Elect, two Vice-Presidents, a Secretary, a Treasurer, a Speaker and Vice-Speaker of the House of Delegates, and a Councilor for each Councilor District. These officers shall be elected by the House of Delegates as hereinafter provided in the By-Laws.

Sec. 2. There shall be elected at the Annual Session one who shall be known as President-Elect until the beginning of the next calendar year which is also the fiscal year of the Association, at which time he automatically becomes president, to serve as such for one year.

Sec. 3. The other officers, except the Councilors, shall be elected annually. The terms of the Councilors shall be for three years. As nearly as possible, one-third of the members of the Council shall be elected each year.

Sec. 4. The Delegates and Alternate Delegates to represent this Association at the House of Delegates of the American Medical Association shall be elected in accordance with the Constitution and By-Laws of the American Medical Association.

Sec. 5. Terms of office of the officers and committeemen, unless otherwise provided, shall be for a term of one year from January first following the date of their election.

All the officers shall serve until their successors are elected and installed.

Sec. 6. In case of vacancy in an office, unless otherwise provided for in this Constitution or By-Laws, the Council shall have the power to appoint temporarily a successor, until the House of Delegates shall meet and reelect one, or until the next Annual Session.

ARTICLE IX—FUNDS AND EXPENSES

The Annual Dues shall be determined by the House of Delegates, but shall not exceed the sum of Fifteen Dollars (\$15.00) per capita per annum except on a two-thirds vote of the Delegates present. Funds may also be raised from the Association's publications, by voluntary contributions, and in other manner approved by the House of Delegates. Funds may be appropriated by the House of Delegates to defray the expenses of the Association, for scientific and educational publications, and for such other purposes as will promote the advancement of medicine. All resolutions appropriating funds must be approved by the Council before action is taken thereon.

ARTICLE X—THE SEAL

The Association shall have a common Seal, and the House of Delegates shall have power to break, change or renew the same.

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ARTICLE XI—AMENDMENTS

Section 1. The House of Delegates may amend any article of this Constitution by a two-thirds vote of the Delegates present at any Annual Session, provided that such amendment shall have been submitted to the membership in writing and published in the official Journal of the Association not less than three months before the meeting at which final action is to be taken.

Sec. 2. The House of Delegates, at any Annual Session, may instruct the Council to make any changes in the Articles of Incorporation in accordance with the law, which may appear desirable or which may be made necessary by any change or amendment to the Constitution and By-Laws of the Association.

Sec. 3. Upon adoption of this Constitution all previous Constitutions are thereby repealed.

ARTICLE XII—BY-LAWS

The authority for passing By-Laws to the Constitution of the Association shall be vested in the House of Delegates.

REVISED BY-LAWS

CHAPTER I—MEMBERSHIP

Section 1. All members in good standing of the component societies are members of this Association. A component society, however, which is delinquent in the payment of its annual assessments or the rendering of required reports to the Secretary of the Association shall not be permitted to participate in any of the business or proceedings of the House of Delegates or of the Association during such delinquency.

Sec. 2. Membership. The membership of this Association shall comprise all members of its component societies. Any person when he becomes a member shall agree to abide by the Articles of Incorporation, the Constitution and the By-Laws of this Association, or any changes which from time to time may be made in them, providing that he has been given notice of such change. He further agrees to abide by the Constitution and By-Laws of the Association regarding admission and expulsion and the code of ethics as laid down by the American Medical Association as it now exists or may hereafter be amended. However, any member convicted of a felony is automatically removed from membership and can only become a member by reapplication as a new member.

Sec. 3. Active Members. Active members shall comprise all the active members of component societies. No person shall be eligible for election to active membership in a component society unless he shall hold the degree of doctor of medicine, issued to him by an institution of learning accredited by the American Medical Association at the time of conferring such degree, and is licensed to practice in this state.

No person shall be considered an active member until his dues and assessments for the current year have been received at the headquarters of the Association.

Sec. 4. Affiliate Members. Affiliate members shall be those members of component societies (1) who through disability are unable to engage in the active practice of medicine, or (2) who have retired from the practice of medicine but who have been active members up to the time they applied for affiliate membership; provided however, that such member in either class shall have first been declared an affiliate member of such component society at its regular meeting, such action having been approved by the Council; and provided further, that such affiliate membership shall automatically cease and revert to its previous status upon the termination of the disability or upon the resumption

of active practice. Affiliate members shall not pay dues and shall not have the right to vote or hold office.

Sec. 5. Honorary Members. The House of Delegates on recommendation of the Council may elect as honorary members any doctors of medicine who are distinguished for their services or attainments in the field of medicine, public health, research, or other scientific work contributing to medicine. Honorary members shall not pay dues and shall not have the right to vote or hold office.

Sec. 6. Associate Members. The House of Delegates on recommendation of the Council may elect as associate members any persons who are distinguished for their services in the allied sciences or in the field of public health. Associate members shall not pay dues and shall not have the right to vote or hold office.

Sec. 7. Nothing in Sections 3, 4, 5, and 6 shall in any manner invalidate an active, affiliate, honorary, or associate member in good standing at the time of the adoption of this Constitution and By-Laws.

Sec. 8. Guests. Any distinguished physician not a resident of this state who is a member of his own State Association may become a guest during an Annual Session on invitation of the officers of this Association and shall be accorded the privilege of participating in all of the scientific work for that Session.

Sec. 9. Active members shall enjoy all the rights and privileges of the Association, including their subscriptions to MINNESOTA MEDICINE. Affiliate, Honorary, and Associate members shall have all the rights and privileges of active members except those of voting and holding office. They shall be exempt from all dues and assessments, except that they shall not be entitled to copies of MINNESOTA MEDICINE without subscription.

CHAPTER II—HOUSE OF DELEGATES

Section 1. Each component society shall be entitled to send to the House of Delegates each year one delegate, or one corresponding alternate delegate, for every fifty full-paid members, and one for any fraction thereof, but each component society which has made its annual report and paid its assessments as provided in this Constitution and By-Laws, shall be entitled to one delegate.

With the approval of the Council, a component society which previously has been entitled to a delegate or delegates, upon merging with an adjoining component society may retain its right to representation in the House of Delegates provided such society maintains a membership of five or more members.

If there are no delegates or alternate delegates from component societies present at the Annual Session, the House of Delegates may elect acting delegates from among active members of such component societies present at the Session. These acting delegates shall have all the rights and privileges of regular delegates at the Session to which they are elected, but only in the absence of the regular or alternate delegates.

Sec. 2. Twenty delegates shall constitute a quorum. All meetings of the House of Delegates shall be open to members of the Association.

Sec. 3. The House of Delegates, hereinafter termed the House, shall meet on the first day of the Annual Session. It may adjourn from time to time as may be necessary to complete its business, provided that its hours shall conflict as little as possible with the General Meetings. The order of business shall be arranged as a separate section of the program.

Sec. 4. The House shall, at its second meeting at the Annual Session, elect all the officers of the Association except the President. No delegate shall be eligible to the office of President-Elect, and no person shall be elected to any office who is not in attendance upon

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at Annual Session and who has not been a member of the Association for the past two years. The Speaker and Vice-Speaker of the House may but need not be elected from among the members of the House.

Sec. 5. The House shall, at its second meeting at the Annual Session elect representatives to the House. Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body, and as is hereinafter provided.

Sec. 6. The chairman of the various appointed committees may attend the regular meetings of the House without the right to vote. They may participate in debate on their own reports, and on invitation of the House.

Sec. 7. The Speaker, to expediate proceedings, shall appoint from the House such reference committees as he deems necessary to carry out the business of the House.

Sec. 8. The House shall, upon application, provide and issue charters to county or district societies organized to conform to this Constitution and By-Laws.

Sec. 9. The House shall divide the State into Councilor Districts, specifying what counties each district shall include, and may organize in each a medical society of the Councilor District.

CHAPTER III—ELECTION OF OFFICERS

Section 1. The manner of elections shall be determined by the assembled House, and a majority of the votes cast shall be necessary to elect.

Sec. 2. The election of officers shall be the first order of business of the House after the reading of the minutes at its second meeting.

Sec. 3. Any person known to have solicited votes for or sought any office within the gift of this Association shall be ineligible for any office for two years.

CHAPTER IV—DUTIES OF OFFICERS

Section 1. The President shall preside at all meetings of the Association except at the meetings of the House. He shall be an ex-officio member of the Council and the House, but without the right to vote. He shall appoint, with the approval of the Council, all scientific committees, not otherwise provided for. He shall deliver an annual address before the General Assembly and the House and perform such other duties as are herein provided in the Constitution and By-Laws.

Sec. 2. The President-Elect shall be an ex-officio member of the Council and House, but without the right to vote.

Sec. 3. The Vice-Presidents shall assist the President in the discharge of his duties. In case of the President's death, resignation, removal, or inability to function, the First Vice-President shall officiate during the unexpired term.

Sec. 4. The Speaker shall preside at the meetings of the House and shall perform such duties as custom and parliamentary usage require. He shall appoint the reference committees of the House. He shall have the right to vote only when his vote shall be the deciding vote. He shall be an ex-officio member of the Council without the right to vote.

Sec. 5. The Vice-Speakers shall officiate for the Speaker in the latter's absence or at his request. In case of death, resignation, or removal of the Speaker, the Vice-Speaker shall officiate during the unexpired term.

Sec. 6. The Treasurer shall give bond in such sum as the Council may require. The Council shall execute said bond with some indemnity company at the expense of the Association. The Treasurer shall be an ex-officio member of the Council and the House, but without the right to vote. He shall demand and receive all funds due the Association together with be-

quests and donations. He shall pay money out of the treasury only on a written order of the Chairman of the Council, countersigned by the Secretary of the Association; he shall subject his accounts to such examinations as the House may order, and he shall annually render an account of his expenditures and of the state of the funds in his hands. The amount of his salary shall be fixed by the Council. The Council may at its discretion allow the Secretary a revolving fund of such moneys as it deems advisable. This money may be expended by the Secretary for such administrative purposes as he deems necessary.

Sec. 7. The Secretary shall give bond in such sum as the Council may require. The Council shall execute said bond with some indemnity company at the expense of the Association. The Secretary shall attend the General Meetings of the Association and the meetings of the House, and shall keep minutes of their respective proceedings in separate record books. He shall be ex-officio Secretary of the Council, but without the right to vote. He shall be custodian of all record books and papers belonging to the Association, except such as properly belong to the Treasurer, and shall keep accounts of and promptly turn over to the Treasurer all funds of the Association which come into his hands.

He shall provide for the registration of the members and delegates at Annual Sessions and shall act as Business Manager for the Annual Session. Under direct supervision of the Council, he shall arrange for and have charge of the scientific and technical exhibits; collect and bank such funds received in connection thereto. He shall maintain a checking account for current expenses of the exhibits throughout the year but shall turn the balance of the funds not required into the general treasury.

He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall employ such assistants as may be ordered by the Council, and shall make an annual report to the House. He shall supply each component society with the necessary blanks for making their annual reports; shall keep an account with the component societies, charging against each society its assessments, collect the same, and at once turn it over to the Treasurer. He shall prepare and issue all programs. The amount of his salary shall be fixed by the Council. The Secretary shall present to the Association on the last day of the Annual Session, a summary of the proceedings of the Council and the House.

He shall with the coöperation of the secretaries of the component societies keep a register of all the legal practitioners of the State by counties, noting on each his status in relation to his component society, and on request, shall transmit a copy of this list to the American Medical Association.

CHAPTER V—COUNCIL

Section 1. The Council shall have full authority and power of the House between Annual Sessions, unless the House shall be called into session as provided in the Constitution and By-Laws. It shall consist of the Councilors and ex-officio but without the right to vote, the President, the President-Elect, the Secretary and Treasurer of the Association, and the Speaker of the House. A majority of its members shall constitute a quorum.

Sec. 2. The Council shall serve as the Finance Committee of the Association and perform such other functions as may be prescribed in the Constitution, By-Laws, and the Articles of Incorporation.

Sec. 3. The Council shall be the board of censors of the Association. It shall consider all questions involving the rights and standing of members, whether

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in relation to other members, to the component societies, or to the Association. All questions of an ethical nature brought before the House or the General Meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or component societies on which an appeal is taken from the decision of an individual Councilor, and its decision in all such matters shall be final.

Sec. 4. The Council shall meet on the first day of the Annual Session and daily during the Session and at such other times as necessity may require, subject to the call of the Chairman, or on petition of three Councilors. It shall elect a chairman and a clerk, who, in the absence of the Secretary of the Association, shall keep a record of its proceedings. It shall, through its chairman, make an annual report to the House.

Sec. 5. The Council shall provide for and superintend the publication and distribution of all proceedings, transactions and memoirs of the Association, and shall have authority to approve the appointment of the editor and such assistants as the Editing and Publishing Committee deem necessary. It shall determine the salaries of all employees of the Association. All money received by the Council and its agents, resulting from the discharge of the duties assigned to them, must be paid to the Treasurer of the Association. As the Finance Committee it shall annually supervise the auditing of the Association and present a statement of the same in its annual report to the House, which report shall also specify the character and cost of all the publications of the Association during the year, and the amount of all other property belonging to the Association under its control, with such suggestions as it may deem necessary.

Sec. 6. The Council shall fill any vacancy not otherwise provided for which may occur during the interval between Annual Sessions of the House; the appointee shall serve until his successor has been elected and installed.

Sec. 7. The Council shall nominate and present to the House a list of nominations for Delegates to the American Medical Association to be voted upon by the House. Additional nominations may be made from the floor of the House.

Sec. 8. The Council may at its discretion: employ expert assistance in auditing the various records of the officers and committees of the Association; employ such help as it may deem necessary to facilitate the work of the Association; and allot for expenditures such moneys as are budgeted for the Committee on Public Policy and Legislation.

Sec. 9. The Council shall discharge such duties as are provided by law.

Sec. 10. The Council shall be empowered to invest and reinvest such monies as may be available from time to time for the creation and building up of a reserve or sinking fund. A three-fourths vote of the Council shall be necessary to authorize expenditures from this fund other than for investment or reinvestment. It may at its discretion engage the services of a Trust Company to assist in the investment and reinvestment of this fund.

Sec. 11. The Council shall appoint all non-scientific committees, not otherwise provided for in the By-Laws.

Sec. 12. Each Councilor shall be organizer, peace-maker and censor for his district. He shall visit the counties in his district when necessary for the purpose of organizing component societies where none exists; for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the Council on a proper itemized statement, and each Councilor may

receive as compensation a per diem of \$10.00 while engaged in making his official visits to the counties his district, or in attendance at duly authorized special meetings of the Council, but this shall not be construed to include his expense in attending the Annual Session of the Association.

CHAPTER VI—COMMITTEES

Section. 1. There shall be two classes of committee: scientific and non-scientific. All committees shall consist of five members unless otherwise specified in the Constitution and By-Laws. The President may at his discretion, with the approval of the Council, increase or decrease the number of members of any committee. The President and Secretary of the Association shall be ex-officio members of all committees. All committees shall make an annual report to the House.

Sec. 2. The scientific committees shall be appointed by the President with the approval of the Council and shall consist of the following:

Scientific Assembly

a. Local Arrangements

Cancer

Diabetes

Heart

Syphilis and Social Diseases

Deafness Prevention and Amelioration

Hospitals and Medical Education

a. Public Health Nursing

b. Schools for Laboratory Technicians

Maternal Welfare

Military Affairs

Historical

And such other scientific committees as may be deemed necessary.

Sec. 3. The non-scientific committees shall be appointed by the Council and shall consist of the following:

Public Policy and Legislation

Interprofessional Relationship

University Relations

Public Health Education

Editing and Publishing

Medical Economics

County Contact

And such other non-scientific committees as may be deemed necessary.

Sec. 4. The duties of the scientific committees shall be as follows:

1. Committee on Scientific Assembly. This committee shall be subdivided into three sections: Section on Medicine, Section on Surgery, and Section on Specialties. The President shall appoint annually a secretary for each of the sections, which secretary shall automatically become chairman of his section the following year, thus serving a two year term, with the exception that for the year 1938, the President shall also appoint a chairman of each section for a term of one year.

The membership of the Committee on Scientific Assembly shall consist of the Chairman and Secretary of the sections on Medicine, Surgery, and Specialties, the President, the President-Elect, the Secretary of the Association, and ex-officio, the Chairman of the Committee on Local Arrangements. The President shall act as Chairman. The Secretary of the Association shall have general charge of the arrangements and shall act as Business Manager for the scientific and technical exhibits under the direct supervision of the Council. It shall be the duty of the section chairmen to preside over the meetings of their respective sections. The

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secretary of the section shall preside for the chairman in the latter's absence or at his request.

This Committee shall collaborate with the Committee on Local Arrangements to the best interests of the Annual Session.

3. The Committee on Local Arrangements. With the approval of the Council, the Committee on Local Arrangements shall be appointed by the component society of the county in which the Annual Session is to be held; it shall provide suitable accommodations for the meeting places of the Association and of the House, and of their respective committees; and the Chairman of the Committee on Local Arrangements shall assist the Secretary of the Association in making local arrangements.

2. The Committee on Cancer. This committee shall consist of fifteen members, five of which shall be appointed annually for a three year period. Its function shall be to keep the profession informed as to the latest scientific knowledge on the subject of cancer and to encourage local education of the public.

3. The Committee on Diabetes. Its function shall be to encourage the extension of medical knowledge and research into causes and treatment of diabetic disease and also to cooperate with the Committee on Public Health Education in the extension of necessary knowledge of the disease.

4. The Heart Committee. Its function shall be to promote scientific interest and progress in all phases of heart disease and to extend to the public through the Committee on Public Health Education essential education in the prevention and treatment of the disease.

5. The Committee on Syphilis and Social Diseases. Its function shall be to study the problems of prevention and control of syphilis and social diseases.

6. The Committee on Deafness Prevention and Amelioration. Its function shall be to stimulate interest in the prevention and amelioration of this affliction.

7. The Committee on Hospitals and Medical Education. Its function shall be: to give information and commendations, if indicated to the Association in matters pertaining to medical education in the State; to encourage and develop local comprehensive programs for postgraduate instruction and in cooperation with the faculty of the University to arrange for additional courses to be given at a minimum of expense and loss of time; to maintain jurisdiction over the standardization of hospitals within the State, and in cooperation with the American Medical Association which maintains bureaus of standardization to see that such standards are maintained. The chairman of this committee shall be a representative of this Association at the annual congress of Medical Education and Medical Licensure, Public Health and Hospitals of the American Medical Association.

a. The Committee on Public Health Nursing. Its function shall be to study and act in an advisory capacity in conjunction with the Minnesota Organization for Public Health Nursing.

b. The Committee on Schools for Laboratory Technicians. Its function shall be to investigate and report on all schools for laboratory technicians; to formulate standards and makes recommendations as to the qualifications of schools as a guide to members who wish to engage the services of graduates of these schools.

8. The Committee on Maternal Welfare. Its function shall be to promote medical interest and progress in maternal and child welfare; to assist, through the Committee on Public Health Education, in the education of the public.

9. The Committee on Military Affairs. Its function shall be to maintain a constant contact with all branches of the military service and to promote and assist a proper medical cooperation at all times with the army and navy.

10. The Historical Committee. Its function shall be to assemble records of the medical history of this Association.

Sec. 5. The duties of the non-scientific committees shall be as follows:

1. The Committee on Public Policy and Legislation. This Committee shall include the President and Secretary of the Association. Under the direction of the House, it shall represent the Association in securing and enforcing legislation in the interest of public health and scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, state and national affairs.

2. The Interprofessional Relationship Committee. Its function shall be to endeavor to bring about a better understanding and cooperation between the different interprofessional groups allied with the practice of medicine and also other groups that should cooperate in the practice of medicine.

3. The Committee on University Relations. Its function shall be to act as a contact committee with the University of Minnesota and its officials. Such problems as affect the medical profession shall be referred to this committee and they shall bring it to the attention of the proper authorities.

4. The Committee on Public Health Education. This committee shall consist of an executive committee and sub-committees.

The standing sub-committees shall be:

- Child Welfare
- Speakers' Bureau
- Editorial
- Tuberculosis
- Radio
- Red Cross
- First Aid

The chairman may appoint such other sub-committees as he deems advisable and assign to each sub-committee as many members as he deems proper, subject to the approval of the Council.

The function of this committee shall be, first to strive to develop an intelligent public viewpoint toward the medical profession and public health education by means of the press, the lecture platform, and the radio; second, to cooperate with the various agencies throughout the state whose function is the promotion of public health, and whose governing bodies are composed in whole or in part of laymen, so that from a medical standpoint these agencies shall be intelligently administered; third, to use such measures throughout the State as may be necessary to eliminate fraudulent medical advertisements from the public press; fourth, to aid and encourage each component society to conduct at least one annual public health meeting.

5. The Editing and Publishing Committee. This committee shall consist of five members, one of which shall be appointed annually for a period of five years.

The Editing and Publishing Committee shall have the responsibility of editing and publishing MINNESOTA MEDICINE; the committee shall appoint an editor and business manager and a sufficient number of assistants and shall determine their compensation; this shall be subject to the approval of the Council.

The State Association shall pay the Editing and Publishing Committee the sum of two dollars per year per active member in consideration for which each active member of the Association shall receive a copy of the Journal for one year.

Associate editors may be appointed by the Editing and Publishing Committee.

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A section on medical economics shall be printed each month in MINNESOTA MEDICINE under the direction of the Council. The chairman of the Committee on Medical Economics shall have charge of this section under the title of assistant editor. He shall be ex-officio member of the Editing and Publishing Committee and shall attend the meetings of this body.

In matters of general policy pertaining to the welfare of the Association, the Editing and Publishing Committee shall defer to the requests from the Council.

6. The Committee on Medical Economics. This committee shall consist of an executive committee composed of the chairman, the chairmen of sub-committees, and the chairmen of the Committee on Public Policy and Legislation and the Committee on Public Health Education. The duties of this executive committee shall be the coordinating of the general program. Three members shall constitute a quorum.

The sub-committees of the Medical Economics Committee shall be appointed by the chairman of the Medical Economics Committee with the approval of the Council, and shall consist of the following:

a. The Editorial Committee. It shall be responsible for the editing and compiling of the medical economics section which is published each month in MINNESOTA MEDICINE. The chairman of the Committee on Medical Economics shall be the chairman of this sub-committee.

b. The Committee on Professional Education in Medical Ethics and Social and Economic Trends. Its function shall be: (1) to promote knowledge in medical ethics and social and economic trends among medical students and the medical profession in Minnesota. It shall endeavor to secure and maintain a course on these subjects at the Medical School at the University of Minnesota.

c. The Medico-Legal Advisory Committee. Its function shall be: (1) to study the questions pertaining to insurance, especially malpractice insurance as it affects the profession; and (2) to study and advise in legal affairs that affect the profession.

d. The Committee on State Health Relations. Its function shall be: (1) to study the activities of the various State or Governmental Agencies and their relation to the practice of medicine; and (2) to cooperate with these various State and Governmental Agencies whose function is the promotion of public health in maintaining the welfare of the public.

e. The Committee on Low Income and Indigent Problems. Its function shall be to study and present methods and plans for the care of these two groups.

This committee shall make its reports to the executive committee of the Medical Economics Committee. All plans concerning the medical care of the indigent, before being presented to the membership at large must be approved by the executive committee of the Medical Economics Committee and the Council or the House.

f. The Committee on Industrial Relations. Its function shall be to discuss and recommend a policy on the various industrial questions that arise and that affect the medical profession. It shall work in cooperation with the industrial organizations to improve the conditions that affect the medical profession.

g. The Committee on Contract Practice. Its function shall be to study existing forms of contract practice and to inform and advise the executive committee of the Medical Economics Committee upon these and upon all proposed plans for contract practice in Minnesota.

7. The County Contact Committees of Three. They shall consist of three physicians practicing in the county in which they live, and appointed by their local component societies. Their functions shall be to study the medical and health problems so far as they are related to the best interests of the public and cooperate with

their component medical society and the Medical Economics Committee.

CHAPTER VII—COUNTY AND DISTRICT SOCIETIES

Section 1. All county and district societies now affiliated with the Association or those which may hereafter be organized in this State, which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall, on application, receive a charter from and become a component part of the Association.

Sec. 2. As rapidly as can be done after the adoption of this Constitution and By-Laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

Sec. 3. Charters shall be issued only upon approval of the House, and shall be signed by the President and Secretary of the Association. The House shall have the authority to revoke the charter of any component society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

Sec. 4. Only one component medical society shall be chartered in any county. Where more than one component society exists, all members should be brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

Sec. 5. In sparsely settled sections the House shall have authority to organize the physicians of two or more counties into societies to be designated by hyperbating the names of two or more counties so as to distinguish them from other classes of societies, and these societies, when organized and chartered, shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized separately.

Sec. 6. Each component society shall have general direction of the affairs of the profession in its county or district, and its influence shall be constantly exerted for bettering the scientific, moral, and educational condition of the county or district; and systematic effort shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county or district.

Sec. 7. Each component society shall judge of the qualifications of its own members, but, as such societies are the only portals to this Association and to the American Medical Association, ample opportunity to become a member shall be given to every physician in the county or district, who is eligible according to the provisions in this Constitution and By-Laws.

Sec. 8. Any physician who may feel aggrieved by the action of the society of his county or district in refusing him membership, or in suspending, censoring, or expelling him, shall have the right to appeal to the Council, and if he desires, to the Judicial Council of the American Medical Association. Decision of the latter shall be final.

Sec. 9. In hearing appeals the Council may admit oral or written evidence, as in its judgment will best and most fairly present the facts, but in case of every appeal, both as a Board and as individual Councilors in district and county work, efforts at conciliation and compromise shall precede all such hearings.

Sec. 10. A physician living on or near a county line may hold his membership in the component society most convenient for him to attend, on permission of the society under whose jurisdiction he resides.

Sec. 11. At some meeting in advance of the Annual Session, each component society shall elect a delegate or delegates and an alternate or alternates to represent it in the House, in the proportion of one delegate to

In Memoriam

Floyd W. Burns

1876-1937

THE death of Dr. Floyd W. Burns occurred on January 20, 1937 at his home in Saint Paul. He had been in poor health for several months.

Born in Panora, Iowa, in 1876, Dr. Burns came to Saint Paul as a boy of eleven. He attended Central High School and later the University of Minnesota, where he was a member of the Phi Beta Pi fraternity. He obtained his M.D. degree at the University of Chicago and began practice in South Saint Paul in 1901.

Dr. Burns served as a captain in the medical corps of the army during the World War and was stationed at Fort Houston, Texas, during most of his service. He was a member of Post No. 8 of the American Legion and was a Mason and member of Osman Temple Shrine.

Dr. Burns is survived by his widow, a son Robert, four brothers—Ormond of Saint Paul, William of Duluth, Dr. M. A. Burns of Milan and Ernest Burns of San Diego, California.

Dr. Burns held the esteem of his fellow practitioners in Saint Paul and was well liked by his many friends.

Oscar E. Locken

1891-1937

THE death of Dr. Oscar E. Locken of Crookston came as a shock to his many friends in the medical profession throughout the state. His death occurred at the age of forty-five on January 18, 1937, after a week's illness from pneumonia.

Born in Crookston, March 8, 1891, the son of John H. and Julia Vennevold Locken, he graduated from the Crookston High School in 1909 and four years later received his B.A. degree at St. Olaf College, Northfield, Minnesota. While at college he was president of the Student Council. Two years later he entered the University of Minnesota medical school and after graduating served an internship at the University Hospital and a year at the Mayo Clinic.

Returning to Crookston Dr. Locken began practice and was one of the founders of the Northwestern Clinic in that city. In recent years he had specialized in internal medicine.

Dr. Locken had held many executive offices. At one time he was mayor of Crookston. For six years he was health officer of that city. He had also been president of the State Sanitary Conference, the Red River Valley Medical Society and the Minnesota League of Municipalities. He was also president of the commission of the Polk and Norman County Sanatorium. Recently he had been appointed to the Social Security and Public Welfare survey of the State Planning Board.

CHAPTER VIII—MISCELLANEOUS

Section 1. The Articles of Incorporation, the Constitution, and By-Laws of the Association shall be binding on every county and district society and every member of every such society; anything in the Articles of Incorporation, the Constitution, or the By-Laws of any such society to the contrary notwithstanding.

Sec. 2. A member of this Association must be a member of some component society and conversely a member of a component society must be a member of this Association. An action of the House or of the Council shall be binding upon its members unless otherwise provided.

Sec. 3. The Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

Sec. 4. The deliberations of the Association shall be governed by parliamentary usage as contained in Robert's Rules of Order, when not in conflict with this Constitution and By-Laws.

Sec. 5. All papers read before the Association or any of the societies shall become its property. Each paper shall be deposited with the Secretary of the Association when read.

Sec. 6. The time required for delivery of any paper or address before the Association shall be left to the discretion of the Committee on Scientific Assembly.

CHAPTER IX—AMENDMENTS

These By-Laws may be amended at any Annual Session by a majority vote of all the delegates present at the Session, after the amendment has lain on the table for one day.

Upon the adoption of these By-Laws all previous By-Laws are thereby repealed.

He had served for many years as first vice president and member of the Executive Committee of the Minnesota Public Health Association.

Last year when the House of Delegates of the Minnesota State Medical Association was looking for the best qualified member to preside over their deliberations, Dr. Locken was chosen. He will be greatly missed by that body.

Surviving are his widow, the former Agnes Oppgaard of Madison, Minnesota, whom he married in 1929; a son, John; and two daughters, Helene and Mary Ellen.

Erwin W. Exley
1897-1936

DR. ERWIN W. Exley of Minneapolis died May 22, 1936, from complications following appendectomy. Taken ill when about to return home from attending a medical meeting in Boston, Dr. Exley was taken from the train at New York to the Postgraduate Hospital where the operation was performed.

Dr. Exley was born in Menasha, Wisconsin, in 1897 and received his preliminary education in the public schools there. He received the degree of B.S. from the University of Wisconsin in 1921 and his M.D. from the University of Minnesota in 1925. He served his internship at the Miller Hospital, Saint Paul, following which he was associated with Dr. Gilbert Thomas in Minneapolis for three years. He then opened an office in Minneapolis for the practice of urology.

Dr. Exley was a member of the Hennepin County Medical Society, the Minnesota State Medical Association and the American Medical Association. He was also a member of the American Urological Society and the Alpha Kappa Kappa medical fraternity.

Dr. Exley is survived by his widow, a son and a daughter, both parents who live at Menasha, and a brother, also a physician.

Henry S. Plummer
1874-1936

DR. HENRY S. PLUMMER, scientist, physician, a member of the staff of The Mayo Clinic for thirty-five years, died at his home in Rochester, Minnesota, of cerebral thrombosis on December 31, 1936, at the age of sixty-two. Dr. Plummer was born March 3, 1874, in Hamilton, Minnesota, on the old stagecoach trail to Dubuque. He took premedical courses at the University of Minnesota, and attended Northwestern University, receiving the degree of M.D. in 1898. He then practiced in Racine, Minnesota, from 1898 to 1901. Entering the Mayo Clinic in 1901, he was a pioneer in the development of roentgenology, bronchoscopy, esophagoscopy and electrocardiography.

In the next twenty years he devoted most of his time to improving methods of general medical diagnosis, and through his efforts many discoveries of science and new laboratory procedures were incorporated into clinical research at the clinic. During this period he made a special study of disturbances of the thyroid gland, and as a result cleared up many of the previously confusing ideas on the subject of thyroid

disease. His studies on the effect of iodine in the treatment of exophthalmic goiter, for example, led to an immediate reduction in the mortality in this disease from about 3 or 4 per cent, what it had been in this country, to less than 1 per cent, and the necessity for multiple stage operations was almost eliminated.

On October 4, 1904, Dr. Plummer married Daisy Berkman, daughter of Dr. and Mrs. David M. Berkman. He is survived by his wife, by his daughter Gertrude (Mrs. James A. Thomas), and by his son Robert.

Dr. Plummer was a member of the Minnesota State Medical Association, Olmsted-Houston-Fillmore-Dodge County Medical Society, Minnesota Pathological Society, Southern Minnesota Medical Association, Central Interurban Clinical Club, Minnesota Society of Internal Medicine, Central Society for Clinical Research, Minnesota Horticultural Society, University Club and the St. Paul Athletic Club; he was a Fellow of the American College of Physicians a Fellow of the American Medical Association, and held membership in the Association of American Physicians, Association for the Study of Internal Secretions, American Association for the Advancement of Science, American Association for the Study of Goiter, American Gastroenterological Association, Medical Library Association, American Association for Thoracic Surgery, American Public Health Association, Royal Society of Arts, Alumni Association of The Mayo Foundation, Sigma Xi, and Alpha Omega Alpha.

In 1933, he was elected president of the Association for the Study of Goiter, and in 1935, Northwestern University conferred on him the degree of D.Sc. (honoris causa).

A man of great mechanical genius, he had much to do with the design and construction of the new clinic building, which was erected in 1929. Many features of this building attest his ingenuity. For example, he designed the conveyors which carry records and other essential data to whatever floor they are needed, and he was responsible for the system of signal lights which facilitates the handling of patients. The clinic's auditorium on the fourteenth floor, where Staff meetings are held, was fittingly named "Plummer Hall" to honor him, not only in recognition of his contributions to medicine, but to pay tribute to his mechanical and artistic genius as well.

There seemed to be no field to which his interest did not extend. He had a great deal to do with the design and construction of the Franklin Heating Station, and so great was his knowledge of all phases of engineering that he was called in as consultant by the company that supplies Rochester and vicinity with natural gas. One of his hobbies was horticulture, and at the time of his death he was experimenting with the effects of electricity on growing plants.

A man of catholic tastes, and one widely read in fields other than medicine, he believed that physicians should not neglect the more leisurely aspects of culture, and he was instrumental in having set aside in the medical library a room where one so minded could browse in the classics.

OF GENERAL INTEREST

Dr. Norman M. Smith of Minneapolis was recently elected president of the Uptown Commercial Club.

* * *

Dr. John Amberg Haugen and Miss Phoebe Saunders, both of Minneapolis, were married February 3, 1937, in Plymouth Congregational Church, Minneapolis.

* * *

Dr. Charles E. Lyght, director of health service at Carleton College, Northfield, Minnesota, was recently elected an associate of the American College of Physicians.

* * *

Dr. S. H. Anderson, eye, ear, nose and throat specialist of Red Wing, became associated the first of the year with the firm of Drs. Johnson and Steaffens, with offices in the Red Wing Clinic.

* * *

Dr. C. L. Sherman of Luverne, president of the Southwestern Minnesota Sanatorium, was named president of the Sioux Valley Medical Association, at the annual meeting held in Sioux City, Iowa, January 20.

* * *

Dr. W. G. Benjamin, of Pipestone, was recently re-elected president of the Pipestone Civic and Commerce Association at the annual meeting of the Board of Directors.

* * *

Dr. Edwin L. Gardner, Minneapolis, who was elected a member of the American Gastroenterological Association last year, has been recently notified of his election to the International Society of Gastroenterology.

* * *

The village of Lismore, Minnesota, is looking forward to having a resident physician soon. Dr. A. W. Pasek of Duluth, a graduate of the University of Minnesota, has announced that he will open an office there.

* * *

Miss Kathleen Keefe and Dr. Florian Baumgartner, both of Minneapolis, were married on January 11 in Incarnation Church, and will make their home in Minneapolis. Dr. Baumgartner will be graduated in June from the University of Minnesota School of Medicine.

* * *

Dr. Charles N. Spratt of Minneapolis addressed the King County Medical Society in Seattle, Washington, on January 18. On Tuesday, January 19, Dr. Spratt presented his films on Eye Surgery before the Puget Sound Academy of Ophthalmology.

* * *

Dr. E. L. Gardner and Dr. R. S. Ylvisaker announce their association for the practice of internal medicine with offices at 1629 Medical Arts Building, Minneapolis. They will give special attention to the diagnosis and treatment of gastro-intestinal disease.

At the annual meeting in Saint Paul, January 12, the Minnesota State Board of Health re-elected its present officers. They are Dr. Frederick Bass, University of Minnesota engineering professor, president; A. S. Milinowski, Saint Paul, vice president, and Dr. A. J. Chesley, secretary and executive officer.

* * *

A series of six weekly lectures on health was opened at the Minneapolis Y.M.C.A. Monday evening, January 4, with a talk on "Diet" by Dr. W. A. O'Brien of the University of Minnesota. Other speakers in the series are Dr. M. J. Shapiro, Dr. Donald A. Dukelow, Dr. A. G. Wethall, Dr. J. A. Myers and Dr. S. Alan Challman.

* * *

The Extension Division of the University of Minnesota announces a lecture and demonstration course in x-ray diagnosis to be given by Dr. Leo G. Rigler and his associates at the University Hospital beginning Thursday, February 11, from 6:20 to 8:00 p.m. and continuing once each week for sixteen weeks. Anyone interested should communicate with the Extension Division, University of Minnesota.

* * *

Dr. N. O. Pearce was recently named president of the Hennepin County Tuberculosis Association. For the past four years he has been chairman of the medical committee of the association and, as a member of its board of directors, he has been actively interested in the tuberculosis prevention program.

Dr. Stephen Baxter was elected first vice president; Dr. W. A. Aurand, second vice president; Mrs. Sylvester Koontz, secretary (re-elected) and W. P. Christian, treasurer.

* * *

Honored by the Rockefeller Foundation, Dr. Kenneth F. Maxcy, professor and head of the department of preventive medicine and public health at the University of Minnesota, has been chosen one of the scientific directors of the International Health Division of the Foundation. The appointment, for a three-year term, became effective January 1. Dr. Maxcy joined the University staff last fall, coming from the University of Virginia to succeed Dr. Harold S. Diehl, who was promoted to the post of dean of medical sciences.

* * *

Information has been received from a member at Brooten, Minnesota, that last September a man who signed his name "E. M. Giess" and claimed to represent the Good News Agency of Brookings, South Dakota, spent about ten days at Brooten selling magazine subscriptions. When no magazines were received a letter was sent to the above agency but was later returned unclaimed. Apparently no such agency exists and warning is therefore given. Agent Giess is a cripple thirty-five to forty years of age, about 4 feet

10 inches in height and weighs about 100 pounds. His teeth are poor. There is considerable wasting of the muscles of his arms and legs and his speech is almost inarticulate.

* * *

Announcement has been made that Dr. Charles B. Lenont, dean of Virginia's medical fraternity, and Dr. Edward N. Peterson of Eveleth, will unite in the establishment of a medical clinic in Virginia, to be known as the Lenont-Peterson Clinic. The clinic will open February 1, in remodeled and newly equipped quarters in the Lenont Hospital Building. When fully completed, sometime in May, an additional investment of between \$25,000 and \$30,000 will be represented. The complete medical staff has not yet been selected, and it is the plan to build up the personnel gradually, with trained men in all departments of medicine and surgery. The clinic, in addition to the recently opened \$300,000 Municipal Hospital, will establish Virginia as an important medical center for Northern Minnesota. Dr. Lenont is chief-of-staff of the new hospital.

* * *

A program of medical lectures arranged by the Minnesota branch of the American Association of Medical Social Workers for the winter season opened Friday evening, January 22, with a talk on "Medical Ethics for Social Workers" by Mr. James Baker, executive secretary of the Hennepin County Medical Society. On February 12, Miss Christ of the University Hospital Social Service Department, will present a paper on "Syphilis in the Eye." Dr. Erling Hansen will discuss the paper. Dr. Hilleboe, director of tuberculosis division, State Board of Control, will speak February 26 on the subject "Crippled Children Under the Social Security Act." "Orthopedic Problems" will be presented by Dr. E. T. Evans on March 12, and Dr. E. M. Rusten will discuss the question of "Allergy" on March 26. Dr. Bernard Watson of the University Student Health Service will present the subject "Hypothyroidism and Diabetes" at the meeting of April 9.

All lectures will be given at 4:30 p.m. Fridays in the lecture room of the Hennepin County Medical Society headquarters, 2000 Medical Arts Building, Minneapolis.

Questions Requested

A symposium on obstetrics and gynecology has been arranged for the 84th Annual Meeting of the Minnesota State Medical Association at the St. Paul Auditorium, May 3, 4, and 5, by the Committee on Scientific Assembly.

Practical problems of the practitioner are to be principally considered by the symposium speakers at this session. Members are accordingly requested by the committee to send to state headquarters immediately any questions they would like to have discussed and answered. The questions will be incorporated in the talks given by the symposium speakers.

HOSPITAL NEWS

Dr. L. H. Cady has been named chairman of the medical staff of St. Andrew's Hospital, Minneapolis, to succeed Dr. Walter Ude, retired.

* * *

Dr. Carl G. Swendseen has been named chief of staff at Swedish Hospital, Minneapolis. Other officers will be Dr. Oliver H. Peterson, vice chief; Dr. Earl H. Dunlap, secretary, and Dr. Charles R. Drake, treasurer.

* * *

At the forty-fourth annual meeting of the Executive Board of Asbury Hospital, held on January 17, speakers included Bishop J. Ralph Magee of St. Paul, Dr. R. C. Webb, retiring chief of staff of the hospital, and Dr. H. B. Dornblaser, incoming chief of staff.

* * *

St. Mary's Hospital, Minneapolis, and St. Joseph's Hospital, Saint Paul, recently joined the Minnesota Hospital Service Association. Plans are also being made for the establishment of a regional branch of the Association in Wadena, it has been announced.

* * *

Victor S. Lindberg, assistant to Rev. L. B. Benson superintendent of Bethesda Hospital, Saint Paul, for the past three and a half years, has been appointed superintendent of the Swedish-American Hospital at Rockford, Illinois, where he began his duties February 1.

* * *

At the annual meeting of the Minneapolis Hospital Council recently held, Dr. F. O. Hanson, Superintendent of Swedish Hospital, was re-elected president. Others returned to office were Harry Brown, Northwestern Hospital, vice president; Sister Anna Berglund, Deaconess, treasurer; and Rebecca Peterson, St. Andrews, secretary.

* * *

The fiftieth anniversary of the founding of Maternity Hospital, Inc., was observed at the annual meeting of the corporation on January 20. Mrs. John C. Benson was named president; Mrs. L. A. Page, first vice president; Mrs. Lester R. Badger, secretary; Mrs. George B. Clifford, treasurer. The program included a reading of the report of the first annual meeting of the hospital, and a tribute to Mrs. Martha G. Ripley, founder of the hospital.

* * *

New Radiological Department The Charles T. Miller Hospital

The Charles T. Miller Hospital of Saint Paul has just completed plans, and construction will begin in the very near future, of an addition and alterations to the first and second floors of the northwestern wing of the hospital, for the installation of a supervoltage, 1,200,000 volt, constant potential x-ray therapy machine which is being built by the Kelley-Koett X-ray Company of Covington, Kentucky, for Dr. Edward Schons and Dr. J. P. Medelman, who will be the directors of

radiological department. The building and machines will be completed and ready for operation June 1, 1937. This supervoltage equipment will be the largest and most advanced of its kind, and will have the capacity of treating four patients at a time. It will be used primarily for the more adequate and efficient treatment of deep-seated tumors. The very high voltage and filtration used will yield a radiation of practically gamma ray quality and of unlimited quantity in comparison with external irradiation with large radium blocks, available, for economic reasons, in only a few institutions for treatment of a limited number of patients. Lower voltage equipment will also be installed and will be used as heretofore, where that type of irradiation is indicated, as will also radium.

Today, some hospitals in this country have supervoltage machines in operation, ranging in capacity from 10,000 to 800,000 volts. Reports from these medical centers, such as Harper Hospital, Detroit, Memorial Hospital, New York, Lincoln General Hospital, Lincoln, Nebraska, Northwestern Hospital, Minneapolis, University of Chicago Clinics and Mercy Hospital, Chicago, and others, are exceedingly favorable of the results obtained. Still better results are, therefore, hoped for from the radiation which will be obtained from the new equipment.

The x-ray tube, constructed of indestructible porcelain and metal, in which electrons will bombard a lead-coated copper electrode to create the radiation necessary for treatment, is 27 feet long. It is protected by four inches of lead to prevent the escape of radiation except where it is desired.

The target of the tube, or the x-ray producing electrode, will be constructed of copper, five inches in diameter and one millimeter thick, covered by a thin layer of lead. Lead is used because of its high atomic weight. The electron streams bombarding it will produce a more penetrating radiation than with metal of less atomic weight. The copper and lead target is backed up with a cooling jacket. Oil is used to cool the target; water to cool the oil.

The operator will be protected from radiation by very heavy concrete walls lined with lead. Very adequate measuring equipment will provide for constant control of the quality and quantity of radiation being used. A two-way microphone loud speaker communication system will be provided to permit conversation with the patient, and a periscope will permit observation of the patient during treatment.

The new addition to the Miller Hospital, which is especially designed to house the supervoltage equipment, required skilled engineering. It was, therefore necessary for the architects, Clarence H. Johnston, Inc., of Saint Paul, to work in close coöperation with the engineers of the Kelley-Koett X-ray Company, in designing and drawing the plans. The Kelley-Koett X-ray Company is a pioneer in the development of x-ray equipment, having been prominent in the field since the early days of the x-ray. The plans were reviewed with Dr. Lauriston S. Taylor of the U. S. Bureau of Standards some time ago, before final adoption.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

Medical Broadcast For February

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 2:30 o'clock every Thursday afternoon over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker—William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

February 4—As We Grow Older.

February 11—First Aid.

February 18—Colitis.

February 25—Loss of Teeth.

State Meeting

A scientific exhibit section of exceptional interest to medical men of the Northwest has been assembled for the 84th Annual Meeting of the Minnesota State Medical Association to be held at the St. Paul Auditorium May 3, 4 and 5.

The Northwest Industrial Medical Conference which occupies an entire day of the meeting program has prompted a unique exhibit group on industrial medicine in which the United States Public Health Service, the Division of Labor Standards, the United States Navy, Safety Engineer; the United States Army, Surgeon General and the Aviation Department, and the State Department of Health of Connecticut probably will participate.

The stellar feature of the exhibits will be provided by Dr. A. E. Jenks of the University of Minnesota Sociology Department and Dr. C. F. Jackson, head of the Anatomy Department of the University Medical School. It will consist of Minnesota's pre-historic girl, inhabitant of the Pleistocene Age discovered by Dr. Jenks, and an exhibit on comparative anatomy provided by Dr. Jackson.

Other important exhibitors include: Dr. F. H. Krusen of Rochester and Dr. M. E. Knapp of Minneapolis who will combine to present an extensive exhibit and demonstration of physical therapy; the Minnesota-Dakota Orthopedic Club that will exhibit and demonstrate fracture treatment; the Minnesota Academy of Ophthalmology and Otolaryngology; Dr. L. F. Hawkinson of Brainerd who will have a new exhibit on endocrinology; the American Medical Association which will exhibit a variety of subjects including cosmetics, obesity, medical economics; the Cancer Committee which will combine with the American Society for the Control of Cancer to have actual laboratory examination of specimens at the meeting; the Children's Hospital and the Gillette State Hospital; Dr. Hamline Matson, Minneapolis, who will exhibit

on hand infections; the Mayo Clinic, the University of Minnesota and many others.

An hour of each morning and afternoon session will be devoted exclusively to exhibits and scientific demonstrations.

Technical exhibitors who have already purchased exhibit space for the meeting follow. Members are especially urged to patronize them in recognition of their coöperation in the meeting.

Rice County Society

At the meeting of the Rice County Medical Society held in the Faribault Clinic Rooms, on Thursday, January 28, motion pictures provided through the courtesy of Davis & Geck, Brooklyn, N. Y., were shown on the following subjects:

1. Subtotal Thyroidectomy
2. Perineal Prostatectomy for Benign Hypertrophy
3. Montgomery-Simpson Suspension of Uterus
4. The Latzko Extraperitoneal Cesarean Section

Scott-Carver County Society Meets with Minnesota Valley Dental Study Club

The Scott-Carver County Medical Society, in conjunction with the Minnesota Valley Dental Study Club held a meeting at Mudbaden Sanitarium, Monday, January 11, 1937. The meeting was devoted to a discussion of economic and legislative matters of interest to both groups.

Speakers for the Scott-Carver Society were Dr. L. L. Sogge of Windom and Mr. Manley Brist of Saint Paul. Guest speakers from the Dental Club were Dr. Clayton Swanson and Dr. Louis Weiss, both of Minneapolis.

Steele County Society

Dr. J. F. Schaefer was elected president of the Steele County Medical Society for the coming year. Dr. Benedick Melby of Blooming Prairie was chosen vice president and Dr. C. T. McEnaney of Owatonna secretary-treasurer.

Waseca County Society

Dr. William Bernstein of New Richland was chosen president of the Waseca County Medical Society for 1937. Dr. R. C. Hottinger of Janesville was named vice president and Dr. George H. Olds of Waseca, secretary-treasurer.

Washington County Society

The following are the officers of Washington County Medical Society for 1937:

President—J. W. Stuhr, Stillwater.
 First Vice President—R. P. Ewald, Newport.
 Second Vice President—E. V. Strand, Bayport.
 Secretary-treasurer—E. S. Boleyn, Stillwater.
 Delegate—E. S. Boleyn, Stillwater.
 Alternate—W. R. Humphrey, Stillwater.
 Censor for three years—D. Kalinoff, Stillwater.

Winona County Society

At the annual meeting of the Winona County Medical Society held Monday evening, January 4, in Winona, the following officers were elected for 1937:

President—Dr. A. E. Meinert, Winona.
 Vice President—Dr. Robert Tweedy, Winona.
 Secretary-treasurer—Dr. I. W. Steiner, Winona.

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| Abbott Laboratories
North Chicago, Ill. | Lea & Febiger, Publishers
Philadelphia, Pa. |
| American Hospital Supply Corp.
Chicago, Ill. | Lederle Laboratories
New York, N. Y. |
| C. F. Anderson Co., Inc.
Minneapolis, Minn. | Lepel High Frequency Laboratories
New York, N. Y. |
| Ayerst, McKenna & Harrison
Montreal, Canada | Libby, McNeill & Libby
Chicago, Ill. |
| Bilhuber Knoll Corp.
Jersey City, N. J. | J. B. Lippincott Co.
Philadelphia, Pa. |
| Boehm Surgical Instrument Corp.
Rochester, N. Y. | Mead-Johnson Co.
Evansville, Indiana |
| The Borden Company
New York, N. Y. | Medical Protective Co.
Wheaton, Ill. |
| Brown & Day, Inc.
St. Paul, Minn. | Mellin's Food Co.
Boston, Mass. |
| Burroughs Wellcome & Co.
New York, N. Y. | Merck & Co.
Rahway, N. J. |
| Bush X-Ray Company
Minneapolis, Minn. | Wm. S. Merrell Co.
Cincinnati, Ohio |
| Coca Cola Company
Atlanta, Ga. | Middlewest Instrument Co.
Chicago, Ill. |
| Davies Rose & Co.
Boston, Mass. | C. V. Mosby Book Co.
St. Louis, Mo. |
| DeVilbiss Company
Toledo, Ohio | V. Mueller & Co.
Chicago, Ill. |
| Dictograph Products Co.
New York, N. Y. | Pengelly X-Ray Co.
Minneapolis, Minn. |
| Encyclopedia Britannica, Inc.
Minneapolis, Minn. | Petrolagar Laboratories
Chicago, Ill. |
| H. G. Fischer & Co.
Chicago, Ill. | Philip Morris & Co., Ltd.
New York, N. Y. |
| Ford Motors, Twin City Branch
St. Paul, Minn. | Physicians & Hospitals Supply Co.
Minneapolis, Minn. |
| General Electric X-Ray Corp.
Minneapolis, Minn. | W. B. Saunders Co.
Philadelphia, Pa. |
| General Foods Sales Co., Inc.
New York, N. Y. | Schering Corp.
Bloomfield, N. J. |
| General Heat & Air Engineers
Minneapolis, Minn. | Upsher Smith Co.
Minneapolis, Minn. |
| Gerber Products Division
Fremont, Michigan | Sonotone-Minnesota Co.
Minneapolis, Minn. |
| H. J. Heinz Co.
Pittsburgh, Pa. | E. R. Squibb & Sons
New York, N. Y. |
| Horlick's Malted Milk Corp.
Racine, Wisc. | Standard X-Ray Sales Co.
St. Paul, Minn. |
| Kellogg Co.
Battle Creek, Mich. | U.S. Hospital Supply Co.
Minneapolis, Minn. |
| I. Kessell & Co.
St. Paul, Minn. | Universal Products Corp.
Pottstown, Pa. |
| | Winthrop Chemical Co.
New York, N. Y. |

Clay-Becker County Society

The following are the officers of Clay-Becker County Medical Society for 1937:

President—A. R. Ellingson, Detroit Lakes.
 Vice President—E. K. Ingebrigtsen, Moorhead.
 Secretary-treasurer—L. H. Flancher, Lake Park.
 Delegate—C. W. Simison, Hawley.
 Alternate—L. H. Rutledge, Detroit Lakes.

WOMAN'S AUXILIARY

MRS. E. M. HAMMES, *President*,
1456 Summit Avenue, Saint Paul

MRS. A. A. PASSER, *Editor, Press and Publicity*, Olivia

St. Louis County Auxiliary

Gold and silver appointments decorated the tables for the dinner dance given by the members of the St. Louis County Medical Society and its Auxiliary in the ballroom of the Spalding Hotel in Duluth in December. The occasion was the fiftieth anniversary of the founding of the St. Louis County Medical Society and the twenty-fifth anniversary of the organization of the Auxiliary.

Arrangements were completed by Mrs. Robert S. Forbes, president of the Auxiliary, and Dr. Harry Kin, president of the County Society.

The program included an address by Prof. Herbert Patton of the University of Minnesota on "1886 and A That." Dr. O. W. Parker of Ely gave a brief history of the range activities and Dr. Klein gave a résumé of the history of the county group. Dr. Malcolm Gillespie presented a pictorial history of the County Society.

Mrs. Robert S. Forbes, president of the Auxiliary, announced the addition of a ten dollar cash prize to the awards being made by the state group to winners in the statewide high school public speaking contest sponsored by the Minnesota Public Health Association and its affiliated associations. The cash award is made to the St. Louis County Auxiliary.

Hennepin County Auxiliary

A first prize of ten dollars and a second prize of five dollars were given to the winners in Senior High Schools and a similar prize was awarded to the winners in Junior High Schools by the Hennepin County Auxiliary in addition to the state prizes in the public speaking contest.

The regular meeting of the Hennepin County Auxiliary was held in the Medical Arts Library on December 4 in the form of a Christmas party.

Mrs. J. M. Neil and Mrs. A. N. Bessesen, Jr., arranged the joint party of the Hennepin County Medical Society and its Auxiliary held in the Medical Arts Library on January 18. A smörgåsbord was held at 8:30 p.m. followed by a program of cards. Members of the Auxiliary wore Swedish costumes.

The sale of articles made by patients at Glen Lake Sanitarium and conducted by the Hennepin County Auxiliary was an outstanding success. The receipts of the three-day sale were \$1,066.20. This is the fourth consecutive year of this sale and each year receipts have increased.

Renville County Auxiliary

The annual Christmas party of the Renville County Auxiliary was held at the High School in Olivia,

Tuesday evening, December 1. After the program the members were entertained at lunch by the Medical Society.

Ramsey County Auxiliary

Mrs. Mark Ryan, chairman of the year book committee for the Ramsey County Auxiliary, distributed the books at a meeting of the Auxiliary held at the home of Mrs. Joel Hultkrans, Saint Paul. Three papers by school children were read on the subject "The Thirty Years' Fight Against Tuberculosis." Miss Bonnie Jean Kelly was presented with a silver trophy by the Auxiliary for the best essay. The contest was open to all Ramsey county high school students. Judges for Ramsey County were Mrs. Warner Ogden for the Auxiliary; Dean Charles S. Templer of Hamline University; and Dr. Thomas E. Broadie, superintendent of Ancker Hospital.

Mrs. Herman Kesting is chairman of the committee for the series of play reviews given by Mrs. Arthur A. Stewart for members of the Ramsey County Auxiliary. Six popular plays will be reviewed by Mrs. Stewart on Tuesday mornings in the medical library rooms of the Lowry Medical Arts Building.

Scott-Carver County Auxiliary

The regular meeting of the Scott-Carver Auxiliary was held at the home of Mrs. H. M. Juergens of Belle Plaine. Mrs. W. F. Maertz of New Prague is president of the Auxiliary and conducted the business meeting.

* * *

Mrs. E. M. Hammes, president of the State Medical Auxiliary; Mrs. James Blake, finance chairman of the National Auxiliary, and Mrs. J. F. Norman, president-elect of the State Auxiliary, attended the National Board Meeting held in Chicago in November.

Tetrachlorethylene.—"Tetrachlorethylene contains not less than 99 per cent and not more than 99.5 per cent of $\text{CCl}_2:\text{CCl}_2$, the remainder consisting of alcohol." N. F. Tetrachlorethylene has been shown to be a useful anthelmintic for the treatment of hookworm infestation. It is the consensus of the investigators that tetrachlorethylene is less toxic than carbon tetrachloride and at least as efficacious as the latter drug. Untoward reactions are rare, but giddiness, vomiting and drowsiness have been reported in some cases.

* * *

Pernoston.—Butyl β -bromallyl barbituric acid.—Pernoston differs from barbital (diethylbarbituric acid) in that both of the ethyl groups of the latter are replaced, one by a (normal) secondary butyl group, and the other by a substituted brominated allyl group. The actions and uses of Pernoston are essentially similar to those of barbital, but Pernoston is more active than barbital and is used in correspondingly smaller doses. It is used in combating insomnia due to emotional strain and nervous instability. In therapeutic doses it is said to produce no demonstrable toxic effects on the heart, lungs, blood vessels and kidneys. It is supplied in the form of tablets, 3 grains.—*New and Non-Official Remedies.*

PROCEEDINGS of the MINNESOTA ACADEMY of MEDICINE

Meeting of December 9, 1936

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, December 9, 1936. The meeting was called to order by the President, Dr. Thomas S. Roberts, at 8 p. m.

There were forty-seven members and one guest present.

Minutes of the November meeting were read and approved.

The Secretary read a letter of resignation from Dr. John T. Rogers, a past President of the Academy. The secretary stated that the Executive Committee had voted and recommended to the Academy that Dr. Rogers' name be placed on the Honorary Membership list. This recommendation was passed unanimously.

The following officers were elected for 1937:

President Dr. E. M. Jones, St. Paul
Vice-President .. Dr. R. T. LaVake, Minneapolis
Secy.-Treas. Dr. Albert Schulze, St. Paul

Dr. Roberts asked the newly-elected President to take the Chair, and Dr. Jones expressed his appreciation of the honor accorded him in this election.

The scientific program followed.

EPISCLERITIS AND ITS RELATION TO DISEASE OF FEMALE PELVIC ORGANS

WILLIAM L. BENEDICT, M.D.

Section on Ophthalmology, The Mayo Clinic
Rochester, Minnesota

Dr. Benedict read his Inaugural Thesis on the above subject. (To be published in MINNESOTA MEDICINE.)

Abstract

Episcleritis and scleritis appear in various forms as acute, intermittent or chronic affections of one or both eyes. The disease attacks only adult persons and is more common in women than in men. The superficial forms and some of the intermittent forms of the disease are not harmful to sight even though they persist over many years. The deeper forms of the disease affecting the sclera and uvea lead to permanent changes in the coats of the eyeball. Some forms are very painful during the stage of inflammation. Repeated attacks of scleritis lead to thinning of the sclera, the appearance of slate-colored areas in the anterior sclera where inflammatory nodules have been situated, staphylomata in the ciliary zone, and sclerosing keratitis. Through changes in the uvea, the lens and vitreous become cloudy and in some cases secondary glaucoma leads to blindness.

The etiology of the disease has been attributed to tuberculosis, syphilis, gout, leprosy, focal infection, and disturbances of menstruation. It has long been known that episcleritis is associated with uterine disorders and

is prone to occur in adult females who are subject to disturbed menstruation. Histopathologic studies have confirmed the diagnosis of tuberculosis in many eyes enucleated because of grave effects of severe scleritis. Some oculists have stated that nearly all cases of episcleritis and all cases of nodular scleritis are due to tuberculosis, but neither pathologic examination nor clinical experience offers adequate confirmation of this assumption.

Studies of a series of cases of scleritis in women in whom a relation between the attacks and disturbance of menstruation could be established showed that the cervix and uterus were foci of infection. Bacteriologic studies revealed a green-producing streptococcus as the offending organism in all cases. In cases where the relationship could be established, attempts to correct the uterine disorder were made. In some cases the cervix was cauterized; in others, hysterectomy was done. Improvement in the eye condition invariably followed operation. Recurrences were rare and in most instances mild.

Discussion

DR. FRANK BURCH, St. Paul: I am sure I speak not only for the ophthalmological group of this Academy but for all the members in welcoming Dr. Benedict to the organization, and also thanking him for again emphasizing the relation of eye diseases to general diseases. Dr. Benedict has made a real contribution along several different lines establishing such relationship particularly the relation of prostatitis to iritis. In this thesis he has added the fact that episcleritis is not only more prevalent in women, but that it has a definite cause in pelvic infections. Most of us do not see cases of episcleritis frequently. In other intraocular inflammations, as well as in episcleritis, we are beginning to learn in our studies of their etiology that we sometimes have to go far afield in order to direct the proper treatment. Practically all of our treatment heretofore was local, aided by non-specific vaccines, foreign protein therapy, etc. From my own experience, when this relationship of episcleritis with pelvic infection has been established, I had not been able to get any results from vaccines. Patients were improved or cured when referred to the gynecologist and received proper treatment. I believe Dr. Benedict's thesis is an important contribution and that he has established a rational basis for treatment of episcleritis.

DR. C. N. SPRATT, Minneapolis: Dr. Benedict has not mentioned the names of two men who have done considerable work on the etiology of scleritis. Both of these, Verhoeff and Stock, came to the conclusion that it was a form of tuberculosis. While I was house officer under the former at the Massachusetts Eye and Ear Infirmary, and at Freiberg where I have seen the work of the latter, I was much impressed with their findings. Verhoeff had done considerable microscopic work and in addition to this, Stock had injected the

vein of rabbits with cultures of tubercle bacilli and found that lesions of the choroid, uvea and sclera followed which were very similar to conditions observed in humans. In 1911, I reported a series of cases of scleritis treated with tuberculin, before the Minnesota State Medical Association. All of these had been given, previous to treatment, a focal, general and cal reaction to tuberculin. All of these patients recovered. Sometime after this a patient under tuberculin treatment had a lighting-up of a pulmonary condition, and since then I have discontinued its use in all cases. Verhoeff likewise has discontinued the use of tuberculin and relies entirely upon hygienic measures. I rely entirely upon the application of the Shahan thermophore in the treatment of these cases. One application of this instrument at a temperature of 145° for one minute has been followed by cure within a few days to two weeks. This temperature causes no permanent damage to the tissues of the eye. Recurrences do occur in a few cases and it would not seem that hysterectomy would be called for. Vaccines and foreign protein therapy have not been employed in any cases under observation.

DR. BENEDICT (in closing): One cannot consider the phases of scleritis and episcleritis without recognizing several different forms of the disease. Some individuals who are neurotic in temperament have a mild episcleritis, sometimes diagnosed as conjunctivitis, which lasts for a few days and then disappears. That condition is known as episcleritis fugax. It probably is not due to infection. It has been assumed that it is due to some endocrine disturbance. We have no pathological proof of this. There is also an episcleritis which involves only the superficial tissues of the eye and occurs in the menstrual periods. It is noted in the textbooks of Weeks, Fox, de Schweinitz and others. Exacerbations have been noted at menstrual periods or at missed menstrual periods and are interpreted as catarrhal menstruation. The etiology of tuberculosis has been brought into the discussion. Some years ago Dr. Knight and I reported on two eyes which had been removed. In those two patients there was no clinical evidence of tuberculosis but the pathological picture was that of tuberculosis. We know only too well that the pathological appearance of tuberculosis is mixed so much with the pathological appearance of local granulomas and some systemic diseases that it is difficult for the pathologist to distinguish a difference.

Whether the uveal tract is involved secondarily or whether it is a coincident infection with lesions in the sclera has given rise to considerable discussion. As I said in my paper, it is not clearly established whether this is a single infection which is transmitted to the uveal tract or whether it is a separate infection. The lesions in the eye are histologically similar to tuberculosis and frequently attributed to focal infection, and our studies have shown that a green-producing streptococcus will produce such a lesion. We have been unable to find any bacterium aside from streptococcus which would produce such a lesion.

I have at hand case histories collected during the past twenty years—37 cases in all—in which amputation

of the cervix or hysterectomy was performed. In no case was hysterectomy performed only because of infection in the eye itself; but where there was evidence of uterine infection. The infection in the sclera usually disappeared within three days from the time the operation was performed and it never recurred.

I have used the thermophore for its local effect to reduce inflammation in the eye. At temperatures of 140° to 160° the thermophore is kept in contact with the sclerotic nodule long enough to produce local reaction without necrosis. After a few days the inflammatory lesion will disappear, but that is by no means a cure. So long as the source of the disturbance has not been removed there is no question but what recurrences will take place though at irregular intervals.

Peculiarly enough, our clinical observation has shown that all through the child-bearing period there may be no evidence of scleritis, particularly during the periods of pregnancy and lactation.

It is impossible to conceive of episcleritis as being a local disease of the eye. Simply to treat the local disease (and there are many ways of getting rid of the local reaction) has absolutely no influence on the cause of the disease; and to assume that getting rid of the local lesion in any way gets rid of the origin of the disease is to blind one's self to the facts. Episcleritis is evidence of disease somewhere else in the body. The clinical observation that inflammation of the eye subsided after the removal of an infected uterus led us to believe that here was a source of infection that was just as potent as infection of the teeth. Cultures of teeth, tonsils and pelvic organs (uterus in women and prostate in men) always gave us the same type of streptococcus. Therefore, we had reason to believe that if a woman had recurrent attacks of episcleritis and if there was no question about the virulence of streptococci in the pelvic organs, we were justified in removing the uterus.

AGRANULOCYTOSIS

ALFRED HOFF, M.D.

Saint Paul

Dr. Alfred Hoff, of St. Paul, read a paper on the above subject. Slides and charts were shown and cases reported. (To be published in MINNESOTA MEDICINE.)

Abstract

In 1922 Werner Schultz described a highly fatal syndrome which he regarded as a new and distinct clinical entity and for which he proposed the term "Agranulocytosis." Subsequent terminology by various writers included Agranulocytic Angina, Idiopathic Neutropenia, Malignant Neutropenia, and Primary Granulocytopenia.

It occurred mostly in elderly women and was characterized by necrotizing lesions in the mouth, pharynx, rectum and vagina, and was associated with fever, marked prostration and a profound leukopenia with complete or near complete absence of granulocytes in the circulating blood, but with little if any anemia or reduction in the blood platelets.

Since then much discussion has arisen as to whether or not it really constituted a new or a distinct clinical entity.

Surveys of the medical literature by numerous writers—among whom especially to be mentioned are Thomas Fitz-Hugh, Jr., and Roberts and Kracke—indicate that prior to his original description there were only three reports which at the present time would be classified as agranulocytosis; (1) by Brown in 1902, "A Fatal Case of Acute Primary Pharyngitis with Extreme Leukopenia;" (2) one by Schwartz in 1904, "A Case of Extreme Leukopenia;" and (3) one by Tuerck in 1907, "Septic Disease with Atrophy of the Entire Granulocytic System."

According to Fitz-Hugh, Brown believed that his case was identical with those of Phlegmon of the Pharynx reported by Senator in 1888.

Kracke and Parker stated that "it was responsible for more than 1500 deaths in the United States alone in the three year period ending in 1934." They give a comprehensive review of the literature in an excellent article appearing in the *Journal of the American Medical Association* (Sept. 21, 1935) entitled "The Relationship of Drug Therapy to Agranulocytosis." The salient features in the etiological approach were summarized and the accumulative evidence incriminating amidopyrine as a causative factor given.

Leukopenia and granulopenia are frequent accompaniments of many diseased states, such as the leukopenic phase of an acute leukemia, pernicious anemia, aplastic anemia and certain infectious diseases such as typhoid and typhus fever, et cetera. However, in these the clinical features may be and often are distinctive and serve to make diagnosis possible.

Fitz-Hugh and Krumbhaar in 1932 reported the pathological changes found in the bone marrow in three fatal cases and stated that the marrow of the bones examined in one case contained active hemopoietic areas filled with myelocytes, promyelocytes and myeloblasts while the peripheral blood contained only 200 w.b.c. per cu. m.m. In the other two cases there was likewise absence of myeloid aplasia. They suggested a condition of maturation arrest as an explanation for the paucity of the circulating granulocytes.

Henry Jackson, Jr., in a recent article, agrees with this viewpoint and in addition to twenty-seven of his own cases coming to autopsy cites eleven cases analyzed by Custer in which "there are marked proliferation of the myeloblasts with failure of these cells to mature, while the other elements of the bone marrow were undisturbed."

Therefore, neither marked anemia nor thrombopenia are features of this disease. If one permits a severe anemia or hemorrhages in the skin to enter into the clinical picture, the diagnosis of agranulocytosis becomes hopelessly confused with other types of bone marrow insufficiency and especially with the acute phase of aleukemic leukemia whose symptoms in every other respect may be identical.

The present concept of agranulocytosis holds that it is due to a depressed condition of the bone marrow in which a selective failure of the myelocytic function

occurs causing a complete or a near complete disappearance of the granulocytes in the blood stream. Granulocytes protect the body against bacterial invasion and with their disappearance active immunity is lost. Local bacterial invasion takes place in the form of necrotic lesions in the mouth, pharynx and rectum. General septic invasion results unless timely granulocytic recovery takes place. However, general sepsis may be so abrupt as to preclude the possibility of timely granulocytic response, thus resulting in the acute fulminant type with an invariably fatal outcome.

Four cases were presented with one recovery and three deaths. Autopsy was obtained in one case.

Slides were presented, showing the course, with frequent w.b.c. and differential counts, as well as more frequent r.b.c. counts and Hb. determinations and treatment employed.

Two cases followed the regular prolonged use of allonal. One case that died was in the hospital for a different ailment and developed an acute fulminant agranulocytosis after the daily use of two allonal tablets for thirty-one days. One case followed the use of dinitrophenol.

Allonal, according to its manufacturers, is allyl isopropylbarbituric acid chemically fused with amidopyrine in the proportion of 1:1½. It enjoys considerable popularity as a pain relieving and sleep inducing drug both among physicians and the laity, and in consequence is extensively used. Ordinarily it may be administered with unquestioned safety. I had one patient who took two, sometimes three, tablets every night for four years without demonstrable injury. But the accumulated evidence against amidopyrine-containing drugs is such to warrant the statement that its prolonged use in the occasional sensitized individual may result in agranulocytosis and death. There is no exact method for accurately determining such sensitivity and, as a result where its use is unduly prolonged it becomes necessary to check up such patients with frequent total and differential white blood cell counts for evidence of leukopenia and granulopenia and also to exert our best efforts to prevent its indiscriminate use among the laity.

Discussion

Dr. C. E. CONNOR, St. Paul: Our present interest in this entity dates from 1922 when Schultz described it as we have it today. Dr. Pepper, of the University of Pennsylvania, recently gave an historical résumé in which he mentioned the fact that MacKenzie in 1857 referred to Gübler as having first described agranulocytosis in 1857; Trousseau, in 1865, differentiated it from other anginas. Pepper thought they were describing what we know today as agranulocytosis; if so the disease was lost sight of until Schultz brought it to our attention again.

The differential diagnosis from other types of malignant neutropenia, particularly acute leukemia, Vincent's angina, acute streptococcal sore throat and diphtheria depends largely on laboratory methods, especially the differential blood counts and smears and cultures of the throat. There is nothing pathognomonic about the local lesion.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

DR. HOFF (in closing): This disease seems to be of a private hospital disease than a city hospital disease. In a service of about 25 years at the Ancker hospital I cannot recall ever having seen a case of granulocytosis in that hospital. Possibly public hospital patients do not indulge in prolonged self-medication with the drugs of this group. Allonal is being used a great deal and this possibility of doing damage could be recognized.

The meeting adjourned.

R. T. LAVAKE, M.D.
Secretary.

Meeting of January 13, 1937

The Annual Meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, January 13, 1937. The meeting was called to order at 8 o'clock by the president, Dr. M. Jones.

There were fifty-three members and four guests present.

Reading of the minutes and all other business was dispensed with and Dr. Jones turned the meeting over to the essayist of the evening.

DR. THOMAS S. ROBERTS, Minneapolis, retiring president, then said he would depart from the usual custom of addressing the Academy on some scientific subject and talk about his "hobby" instead. Dr. Roberts gave the most interesting and entertaining "Review of the 100 Year Life of Minnesota," illustrated with slides and colored motion pictures.

The meeting adjourned.

A. G. SCHULZE, M.D.
Secretary.

The Physician and the Traffic Problem

Lowell S. Selling, Detroit (*Journal A. M. A.*, Jan. 9, 1937), is of the opinion that the chief reason for criticism of the tests proposed in some states and now given to drivers in others, which should be of interest to physicians, is the fact that these tests in themselves do not separate the good from the bad driver. Many of the driving difficulties are due to emotional handicaps or arise from some temporary physical condition that is correctable or that might not occur again in the same individual during the rest of his life. Under these conditions the mere physical examination, a mere check-up of the eyesight, or a brief psychologic test, such as the Binet or some simpler test, would fail to reveal why the man under consideration had his accident or why he is a chronic law violator. Until physicians themselves give these examinations, compile data and show just where the line must be drawn between adequate and inadequate physical capacities, licensing by means of physical and mental tests will be more or less of a farce. A mere physical handicap is no contraindication to driving, and it requires the decision of an experienced and highly trained individual to make a determination. The features which the physician must consider when mapping out plans for making examinations for driver's license, or examining offenders or persons involved in accidents, from the physical and mental standpoint, are the general physical condition, the eye examination and mental deviations.

PHYSICAL THERAPEUTIC METHODS IN OTOLARYNGOLOGY. Abraham R. Hollender, M.D., F.A.C.S. Associate in Laryngology, Rhinology and Otolaryngology, University of Ill. College of Medicine, etc. 442 pages. Illus. Price, cloth, \$5.00. St. Louis: C. V. Mosby Co., 1937.

CARCINOMA OF THE FEMALE GENITAL ORGANS. M. C. Malinowsky and E. Quater. Translated from the Russian by A. S. Schwartzmann, A.B., M.D. 255 pages. Illus. Price, cloth, \$5.00. Boston: Bruce Humphries, Inc., 1937.

THE MANAGEMENT OF OBSTETRIC DIFFICULTIES. Paul Titus, M.D. Obstetrician and Gynecologist to St. Margaret Memorial Hospital, Pittsburgh, etc. 879 pages. Illus. Price, cloth, \$8.50. St. Louis: C. V. Mosby Co., 1937.

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES. For the Fiscal Year of 1936. 158 pages. Illus. Price, cloth, \$1.00. Washington, D.C.: United States Government Printing Office, 1937.

PROCEEDINGS OF THE THIRTIETH ANNUAL CONVENTION OF THE ASSOCIATION OF LIFE INSURANCE PRESIDENTS. 251 pages. Illus. 1936.

PROCTOLOGY: A TREATISE ON THE MALFORMATIONS, INJURIES AND DISEASES OF THE RECTUM, ANUS AND PELVIC COLON. F. C. Yeomans. New York: D. Appleton-Century Co., 1936.

Fortunate indeed are those medical societies and physicians who have the second edition of Yeomans' Proctology in their libraries. The volume is very complete, covering all phases of proctology. A considerable number of outside references are included for those who wish to investigate certain phases of rectal disease not covered in the text. In this second edition, written after seven years, the advances in diagnosis and therapy have been carefully included. These have been cited in the preface, which saves time for anyone especially interested in the newer advances in proctology. The text is a valuable book, particularly as a reference for a practicing physician.

WALTER A. FANSLER, M.D.

THEORY AND PRACTICE OF PSYCHIATRY. William S. Sadler, M.D. 1231 pages. \$10.00. St. Louis: The C. V. Mosby Company, 1936.

The text comprises 1155 pages and seventy-seven chapters. The author has been a prolific writer of popular pamphlets. This large book would embrace the field of psychiatry including its alpha and omega. Besides the subject matter commonly found in the

conventional text book on psychiatry, the author deals with much that is theoretical and, one might say, speculative. Because of the rapidly changing theories and empiricisms, we would expect such a treatise soon to lag behind the prevailing conceptions found in the current literature.

The author lists a general bibliography at the end of the text. There are thirty-four pages devoted to defining neurologic and psychiatric terms.

JOSEPH C. MICHAEL, M.D.

ABORTION, SPONTANEOUS AND INDUCED.

F. J. Taussig, M.D., F.A.C.S. 536 pages. Illus. Price \$7.50. St. Louis: C. V. Mosby Company, 1936.

This book should be considered one of the most outstanding publications of the times, being exceptionally exhaustive in its scope. It is very well written, easily read, and includes many excellent figures and drawings.

There is an article early in the book entitled, "Abortion in Animals," by Walter L. Williams, of Cornell University, which should prove of interest to obstetricians and gynecologists, for it is very apparent that we can learn much from veterinarian medicine and it may be that by closer study some problems in human medicine may be solved.

Taussig includes a chapter on the pathology of abortion which will be invaluable to those who study microscopically all aborted ova and feti. This is one side of the study of abortions which is often disregarded by the clinician and which, if taken up, will be of great aid in preventing future trouble. His chapter on treatment is most complete for he takes the type of treatment in vogue in most of the important countries and clinics of the world. Stress is laid on doing as little damage as possible to already injured tissue. Practically all forms of operative technic are described in both uncomplicated and complicated cases. The dangers of infected abortion are emphasized.

One of the most enjoyable parts to read was the chapter on missed abortion. The subject is so often disregarded in many books or else there is just a short paragraph assigned to it.

A section has been given to legalized abortion in the Soviet Union, much of the material being secured by first hand information from the author's visit to the Soviet States. Most of us have little or no knowledge in regard to this subject, and doctors to whom I have talked are surprised that there is such a thing as illegal abortion in that country. However, the Russians fully realize, as we all do, the harmful effects that can arise from therapeutic abortions and are try-

ing to emphasize a better means—namely prevention by means of educational methods.

The last few chapters of this book should be interesting to the Sociologist as well as to the Doctor because the economic, domestic, theological, ethical and legal aspects are discussed. One chapter deals with the extremely varying laws in the different states in this country.

This book should be in the library of every active practicing physician for, to a great extent, the burden of a decreasing birth-rate rests upon him to overcome. Many condemn contraception, but if nearly every healthy conception could be carried through successfully, the rate of births in this country would not be cause for alarm. It is from this point of view that this book is especially valuable.

EUGENE M. KASPER, M.D.

ALLERGY OF THE NOSE AND PARANASAL SINUSES. French K. Hansel, M.D., M.S. Assistant Professor of Clinical Otolaryngology, Washington University School of Medicine; Fellow of the Association for the Study of Allergy, the Association of Resident and Ex-Resident Physicians of the Mayo Clinic, the American Laryngological, Rhinological and Otolological Society, and the American Academy of Ophthalmology and Otolaryngology. 793 pages illustrated. \$10.00. St. Louis. C. V. Mosby Co. 1936.

It is unfortunate that this book bears a title which would tend to arouse the interest of only the rhinologist or allergist. The subject of allergy has developed so rapidly in the last five years that the internist, the gastro-enterologist, the dermatologist, the pediatrician and even the general practitioner should "tune in" on it and its various manifestations. Here in this book is an admirable discussion of the various types of allergic disturbances. Written primarily for the otolaryngologist, the book is complete in that its early chapters lay a foundation of physiology, biochemistry, bacteriology and histology of the nose and sinuses upon which the subject of nasal allergic disturbances and its relation and association which sinus disease can logically be built. Details have not been slighted, and the sections on hay fever and elimination diets are especially complete.

The author's style is to be commended. There are copious references and quotations from the literature and he has been careful to discuss both sides of points which might be considered controversial.

It has been a distinct pleasure to review this work of Dr. Hansel's, and I unhesitatingly recommend it to anyone interested in the subject of allergy.

K. R. FAWCETT, M.D.

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society.

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THE VALUE OF, AND INDICATIONS FOR, INTRASPINAL INJECTIONS OF ALCOHOL IN THE RELIEF OF PAIN*

ALFRED W. ADSON, M.D.

Rochester, Minnesota

THE introduction, into the subarachnoid space of the spinal canal, of alcohol in limited amounts of various concentrations, results in changes in the nerves and spinal cord, varying from relief of pain to complete paralysis. Since small quantities (2 to 16 minims of 95 per cent alcohol) are capable of relieving pain without producing motor paralysis, the procedure has become very useful in the treatment of intractable pain, which is caused by neuritis, neuralgia or a metastatic lesion. Excessive amounts of alcohol, or improper introduction of alcohol, produce untoward results which may be more distressing than the original condition.

Physiopathology

To quote Stern:†

"The physiological effects depend upon the dosage and reaction on the various types of nerve fibers coursing through the nerve roots.

"In the posterior or sensory roots, we find visceral and somatic fibers. The former transmit impulses from the viscera and blood vessels. The latter transmit all forms of touch, temperature, and pain sensations from the surface of the body. Some somatic fibers carry impulses from the muscles, tendons, and joints. There may also be some efferent sympathetic fibers passing through the posterior roots.

"In the anterior roots are the somatic motor fibers in the body muscles, and the majority of the sympathetic efferent fibers to blood vessels, sweat glands, hair, and internal organs.

"With small doses of alcohol; from two to sixteen minims, the effect is believed to be only upon the non-myelinated or finely myelinated fibers. As the dose is increased, or with repeated smaller doses, one can affect

the more heavily myelinated and coarsely myelinated fibers. With doses of two c.c. or over, not only are all the dorsal root fibers affected, but also the anterior root fibers, and even the cord itself."

"Clinical⁴ evidence indicates that alcohol, introduced into the subarachnoid space, will, at a certain concentration, relieve pain and cause only partial anesthesia. This lasts for from several days to as long as twelve months, depending on the dose and method of administration. The exact 'active' concentration of alcohol which will cause temporary anesthesia remains to be determined, but is approximately 30 per cent. With larger doses or greater concentration, alcohol produces *somatic motor paralysis*, in addition to the sensory paralysis. This effect is probably due to its action on all the fibers of the dorsal roots, including the coarsely-medullated fibers. Alcohol, in sufficient dose and concentration, may even affect the anterior motor roots or the cord itself, but these doses are, of course, to be avoided clinically, for they are extremely destructive.

"Sixteen minims of 95 per cent or absolute alcohol introduced into the subarachnoid space at any level above the second lumbar vertebra, according to the technique described, should not cause motor paralysis. Injected between the second and third lumbar spines, this dose will invariably cause paralysis of the rectum and bladder; but a dose of 8 minims at this level should not cause this complication. Below the third lumbar spine, with the pelvis elevated, the larger dose of 16 minims usually does not cause this complication. The highest level at which alcohol can safely be introduced into the subarachnoid space is between the seventh cervical and first and second thoracic spines, and the maximum dose here should be 10 minims. These doses apply to the adult male. In the female, the doses should be about two-thirds the male dose, on account of the smaller size of the spinal canal and the structures within it.

"In 1931, Loyal Davis, et al., studied the effects of spinal anesthetics of the procaine series on the spinal cord and membranes in dogs. They found that spinal anesthetic solutions are hemolytic, as well as myelolytic, and seem to act on the myelin of nerve fibers as they do on the lipoids of the red blood cell membrane. A

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varying degree of inflammatory reaction always occurred in the *leptomeninges* after the use of these spinal anesthetics. *Passive* changes in the ganglia cells of the gray matter of the cord were similar to those seen in retrograde, or so-called Wallerian, degeneration.

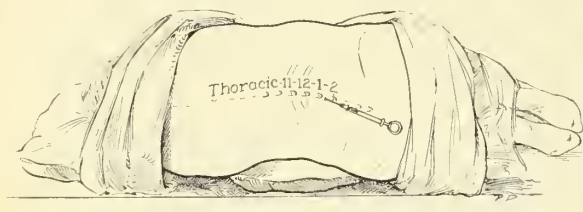


Fig. 1. The position of the patient that is necessary in preparation for subarachnoid injection of alcohol.

Swelling and fragmentation of the axis cylinder and signs of degenerative changes in the *fiber tracts of the cord*, were noted. The changes in the spinal cord were not present after 90 days, so that these changes speak against their permanent nature. No mention was made of any observation on the anterior or posterior roots, or the dorsal root ganglia.

"Koster found that 'spinal anesthesia, induced in autumn frogs, produced histologic changes in the large multipolar cells, particularly in the dorsal region of the spinal cord. These changes consisted of hydropic swelling, loss of distinct outline, bluish staining of the reticulum, dissolution of the Nissl granules, and disappearance of nuclear structure. These changes were transitory, beginning to regress in six hours after the induction of the anesthesia and disappearing entirely within twenty-four hours. No changes from the normal were observed twenty-four or more hours after the anesthesia. Human cords, examined 22, 36, 96, 144, 192, and 816 hours after spinal anesthesia, showed no histologic changes from the normal.'

"I have not obtained any autopsy material following the clinical use of alcohol intraspinally in the doses recommended. That an inflammatory meningeal reaction sometimes results is unquestionable, on account of the clinical signs of such a condition. This may last from one to several days. A slight increase in the cell count of the spinal fluid is invariably obtained. One case clinically suggested the presence of a localized adhesive meningitis several days after an injection of alcohol."

Surgical Indications

Injections of alcohol into branches of the trigeminal nerve and into the Gasserian ganglion for relief of trigeminal neuralgia have been employed for many years. The anesthesia which results from injection of the branches of the trigeminal nerve gradually disappears and pain returns. Alcohol successfully injected into the Gasserian ganglion, however, results in complete and permanent loss of all sensations in the region of distribution of the fifth nerve. Para-

vertebral injections into intercostal nerves never have proved satisfactory in the control of pain which is caused by radiculitis. Injections of alcohol into the sciatic nerve, likewise, have been

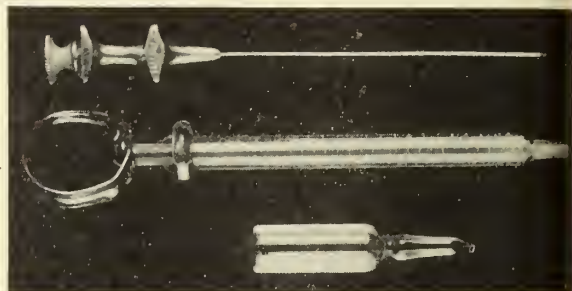


Fig. 2. Glass ampule containing 1 c.c. of sterile 100 per cent ethyl alcohol, Becton and Dickinson syringe and a 21-gauge Luer spinal puncture needle.

disappointing, since the use of amounts adequate to control pain will produce motor paralysis, the sciatic nerve being a mixed nerve. Peripheral injection into the occipital nerves for the relief of occipital neuralgia has become an accepted procedure and is about as successful as injections for the relief of trigeminal neuralgia. The discomfort caused by pruritus ani and pruritus vulvæ has been controlled by local injections of alcohol, but in intractable cases more heroic measures are needed, such as subarachnoid injections of alcohol and rhizotomy of the sacral sensory roots through an approach afforded by laminectomy. Until the introduction of subarachnoid injection of alcohol, visceral pains, especially those attributable to malignancy, compelled patients to use large doses of morphine, or to submit to chordotomy or presacral neurectomy.

It is, therefore, apparent that a simple, effective method for the control of pain is more desirable than rhizotomy and chordotomy. This newer method of introducing alcohol into the subarachnoid space appears to offer the solution to the problem of control of intractable pain. Although a number of surgeons are employing the procedure in treatment of patients who have suitable organic conditions, much credit is due Stern,^{3,6} who has blazed the way with his investigations.

Subarachnoid injections of alcohol are indicated in a number of conditions; namely, post-herpetic neuralgia; radiculitis; painful, inoperable malignant conditions; conditions resulting from metastasis to the spinal column, spinal cord

and nerves, and intractable pruritus ani and pruritus vulvæ. Stern has employed injections to advantage in treatment of numerous other conditions, such as vasospastic diseases, Raynaud's disease, thrombo-angiitis obliterans, essential hypertension, spastic ureter, and dystonia musculorum deformans.

Technic of Injection

Since absolute alcohol is lighter than cerebrospinal fluid, the hydrodynamic problem is to inject a few minims of alcohol into the subarachnoid space in such a manner that they will rise to the surface of the cerebrospinal fluid and come in contact with two, or possibly three, dorsal roots before diffusion and dilution has taken place. This is accomplished by placing the patient on his side (Fig. 1), with the spinal roots to be treated situated on the upper side. Further, to assure that the portion of the spinal canal which contains the two roots to be treated with alcohol is higher than any other portion of the canal, a firm pillow is placed under the patient opposite these dorsal roots. The field is prepared as for a spinal puncture. A Becton and Dickinson 1 c.c. syringe (Fig. 2) is used in order not to err in administering too large a dose of alcohol. The usual Barker, 18-gauge Luer spinal puncture needle suffices but it is advantageous to use a smaller needle, one of 21 gauge. Absolute alcohol is preferable to 95 per cent alcohol. In all instances it should be sterilized in an autoclave to insure against injection of living spores. It can be secured in 1 c.c. glass ampules.

The needle is then introduced through a vertebral space just below or just above the roots to be treated (Fig. 3). After the needle has been introduced, 3 c.c. of cerebrospinal fluid is withdrawn before the alcohol is injected, in order that it may float across a "water" level and come in contact with the dorsal roots. The procedure is not painful when small quantities of alcohol are used. If the injection has been properly performed, the patient promptly will observe a sensation of warmth over the body, corresponding to the distribution of the nerves that arise from the affected roots. In two or three minutes the painful sensations disappear and are followed by loss of pain and frequently by impairment in temperature and tactile sensations. I prefer to use 6 to 8 minims and to reinject, if necessary,

rather than to take a chance of injecting too large a dose and thus producing a motor disturbance. The patient is left in the position that has been described, for fifteen minutes following the injection, in order that the alcohol may slowly

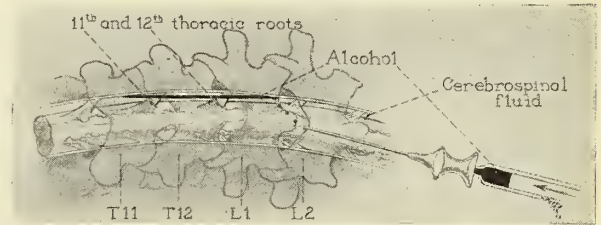


Fig. 3. The procedure of subarachnoid injection of alcohol. Since the alcohol is lighter than cerebrospinal fluid it promptly rises to the surface and thus destroys nonmyelinated and thinly myelinated nerve fibers before diffusion into the cerebrospinal fluid takes place.

diffuse into the cerebrospinal fluid without becoming concentrated about other structures within the spinal canal. If more than one pair of nerve roots is to be treated, injection should be performed on subsequent days unless the injection of alcohol is employed for the relief of severe pruritus ani or pruritus vulvæ, when injection of both sides is made at once. This is accomplished by placing the patient on his abdomen on an operating table, with a kidney rest opposite the lumbar portion of the spinal column. The head of the operating table is lowered 15 degrees and the kidney rest is elevated to bow the lumbar portion of the spinal column and thus to permit introduction of a spinal puncture needle in the fifth lumbar space. The procedure otherwise does not differ from injection with the patient on his side. The amount of alcohol injected should not exceed 6 minims. In both my cases, complete loss of all sensations of the fourth and fifth sacral nerves developed on both sides, with temporary partial loss of anal and vesical sphincteric control. The relief of itching and pain was so successful and dramatic that the patients complained very little of their vesical and rectal discomfort. Their chief concern was not incontinence but an inability for a time to detect the presence of a full bladder or of a full rectum.

The Results after Injection

A detailed review of cases encountered at the clinic would entail reiteration of other published reports. Therefore, charts are presented, which contain a summary of successes, failures and

INTRASPINAL INJECTIONS OF ALCOHOL—ADSON

TABLE I. THE EFFECTS OF SUBARACHNOID INJECTION OF ALCOHOL FOR INTRACTABLE PAIN

Case*	Age, Years	Sex	Diagnosis	Situation of Pain	Minims of Alcohol	Result**	Complications
1	46	F	Carcinoma of cervix with metastasis	Left sciatic region	45	Complete relief	Partial sensory- motor paralysis
2	47	M	Carcinoma of bladder	Bladder and penis	5 and 10	Partial relief	Complete relief after two injections
3	70	M	Metastatic malignancy	Left hip and thigh	9	Complete relief	
4	52	M	Lymphoblastoma of right inguinal region	Right lumbo-sacral region	15	Complete relief	
5	54	F	Carcinoma of uterus with metastasis	Left sciatic region	12	Complete relief	
6	52	F	Carcinoma of bladder with metastasis	Right sciatic region	12	No relief	
7	25	F	Carcinoma of rectum with metastasis	Left sciatic region	12	No relief	
8	41	F	Carcinoma of cervix with metastasis	Left hip and sciatic region	9	Partial relief	
9	60	M	Carcinoma of nasopharynx with metastasis to cervical spine	Shoulder girdle region	8	Complete relief	
10	63	M	Carcinoma of left breast with metastasis to spine	Right sciatic region	6, 8, 6	Complete relief	Complete relief after 3 injections; returned later for rhizotomy
11	27	F	Hodgkin's disease; substernal mass right third rib	Right shoulder	6	No relief	
12	61	M	Carcinoma of rectum with metastasis	Perineum	6	Partial relief	Pain disappeared but tenderness continued
13	53	F	Myeloma of sacrum	Right sciatic region	12	Complete relief	
14	48	F	Carcinoma of cervix with metastasis	Pelvic region	15	No relief	
15	46	F	Carcinoma of rectum with metastasis	Left lumbo-sacral region	12	Complete relief	
16	43	F	Carcinoma of cervix with metastasis	Right thigh and pelvic region	12	No relief	
17	52	M	Carcinoma of rectosigmoid with metastasis	Lower back, in rectum and penis	15	Partial relief	Pain relieved but tenderness remained

*See footnote page 140. **See footnote page 140.

INTRASPINAL INJECTIONS OF ALCOHOL—ADSON

TABLE I. THE EFFECTS OF SUBARACHNOID INJECTION OF ALCOHOL FOR INTRACTABLE PAIN—*Continued.*

Case*	Age, Years	Sex	Diagnosis	Situation of Pain	Minims of Alcohol	Result**	Complications
18	73	M	Carcinoma of prostate with metastasis to pelvis and part of sacrum	Pelvic and sciatic distribution	12	Complete relief	
19	40	M	Tuberculosis of bladder	Perineum	13	No relief	
20	45	M	Tabes dorsalis	Abdomen and leg	15	No relief	
21	71	M	Interstitial cystitis with prostatitis	Suprapubic region	12	Partial relief	
22	29	M	Ureteral calculus	Right hip and sciatic region	15	No relief	Drug addiction
23	30	F	Pruritus ani and vulvæ	Perineum	12	Complete relief	Partial temporary impairment of sphincters and complete sensory loss
24	32	F	Pruritus ani and vulvæ	Perineum	12	Complete relief	Partial temporary impairment of sphincters with complete sensory loss
25	59	M	Postherpetic neuralgia	Left 4th to 6th thoracic nerves	8	Complete relief	
26	56	M	Intercostal neuralgia	Right 2nd to 6th thoracic nerves	8	Partial relief	Rhizotomy for radiculitis due to hyertrophic osteo-arthritis later
27	43	F	Intercostal neuralgia	Right 2nd, 3rd and 4th thoracic nerves	8	Complete relief	
28	57	F	Root pain (radiculitis)	Right 5th lumbar nerve distribution	12	No relief	
29	47	M	Radiculitis	Right sacro-iliac region	8	Complete relief	
30	31	F	Radiculitis	Right abdominal region	12	No relief	
31	58	M	Radiculitis due to hypertrophic arthritis	Right 1st to 4th thoracic nerves	13	Partial relief	Morphine addiction
32	61	F	Diabetic neuritis	Left leg	8	Partial relief	
33	70	F	Diabetic neuritis	Left foot	12	Complete relief	
34	61	F	Diabetic neuritis	Both legs	12	Partial relief	
35	34	M	Ischemic neuritis	Left foot	12	Complete relief	
36	66	F	Ischemic neuritis	Left foot	8	No relief	

*See footnote page 140. **See footnote page 140.

TABLE I. THE EFFECTS OF SUBARACHNOID INJECTION OF ALCOHOL FOR INTRACTABLE PAIN—*Concluded.*

Case*	Age, Years	Sex	Diagnosis	Situation of Pain	Minims of Alcohol	Result**	Complications
37	35	M	Ischemic neuritis	First phalanx of 1st toe, left foot (thrombo-angiitis obliterans and gangrene)	13	Partial relief	Morphine addiction
38	51	M	Ischemic neuritis due to thrombo-angiitis obliterans	Left foot	13	Partial relief	
39	64	M	Sciatica	Left sciatic region	12	No relief	
40	31	M	Sciatica	Right sciatic region	15	Partial relief	Fifty per cent relief. Hemi-anesthesia in sciatic distribution; loss of Achilles reflex; some difficulty in urination

*The cases reported represent those in which treatment was carried out at The Mayo Clinic by Doctors Craig, Love and Adson.

**The failure to relieve pain was attributable, in some instances to insufficient injection for pain of wide distribution, while in others the pain appeared to be of functional origin.

complications. There is no doubt that subarachnoid injection of alcohol in suitable amounts and concentrations, administered to suitable patients, gives instant relief of pain. Excessive doses and improper administration will result in motor impairment when this is not desired. The method does not relieve pain when it is of functional origin nor does it relieve pain when it is of central origin. Although pain can be relieved by subarachnoid injections of alcohol, the injection should not be performed without thorough general and neurologic examination, since root

pain is one of the early signs of intraspinal tumor.

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THE BONE MARROW AND LEUKOPENIA*

SAM H. BOYER, JR., M.D.

Duluth, Minnesota

IT WOULD be possible to subdivide a discussion on the bone marrow and leukopenia so that individual articles could be written on the bone marrow itself, and on each of the formed elements of the blood arising in that organ. However, the purpose of this paper is to give a

brief outline of the function of the bone marrow and to consider those conditions characterized by leukopenia, with particular reference to agranulocytic angina.

Haden¹³ gives credit to Vierodt for performing the first blood count in 1851. However, it is possible that some of his contemporaries may have preceded him. In 1876 Edward Keyes¹⁹

*Read before the St. Louis County Medical Society, May 14, 1936.

published an article in the *American Journal of Medical Sciences* in which he described a method for counting blood cells. This is generally considered to be the first account of such a procedure in American literature. Since that time the study of the peripheral blood and of the point of origin of the granular cells—the bone marrow—has increased steadily.

The bone marrow is one of the most active tissues of the body and must be considered an organ.^{25,31} It has been shown by Wetzel³⁹ to possess a volume of 1419 c.c. which is quite comparable to the volume of the liver and is approximately ten times that of the spleen. Since these latter organs are familiar to all, the comparative size and real extent of the bone marrow is definitely apparent.

The bone marrow not only takes part in hematopoiesis but, because of the wide extent of its reticulo-endothelium, in the production of bile pigment in great amount and also of antibodies. We often do not realize the great activity of the bone marrow and it is only by attempting to estimate the number of cells in the blood and the rate of their production that we secure an idea of how active the bone marrow normally is. Ashby¹ has set the life of a red cell at three to five weeks. If we take the average life of a red cell as twenty-five days, we may assume that one-twenty-fifth of the entire number, or approximately one trillion cells are delivered to the peripheral blood every day. The granular white cells live about three to five days in the circulating blood, which means that roughly five to fifteen billion cells are supplied daily. These enormous figures should give some idea of the extent and activity of this organ.

As you know, the theories of blood formation include the monophyletic and polyphyletic schools. The former theory holds that one primary cell, the hemocytoblast, is totipotent and is the parent of all blood cells, giving rise to the red cells, granular leukocytes, lymphocytes, monocytes, and thrombocytes. The latter school contends that the first recognizable cells are already differentiated. Doan, Cunningham, and Sabin⁸ have modified the latter theory and state that all leukocytes are derived from a primitive white cell which is formed from an extravascular reticular cell. The red cells, on the other hand, are formed intravascularly from primitive endothelial cells lining the capillaries, between the sinuses

of the bone marrow. Bunting,⁴ on the other hand, contends that these are also extravascular in origin. In the white series these cells develop from the blast stage on through the myelocyte to the granulocyte or polymorphonuclear leuko-

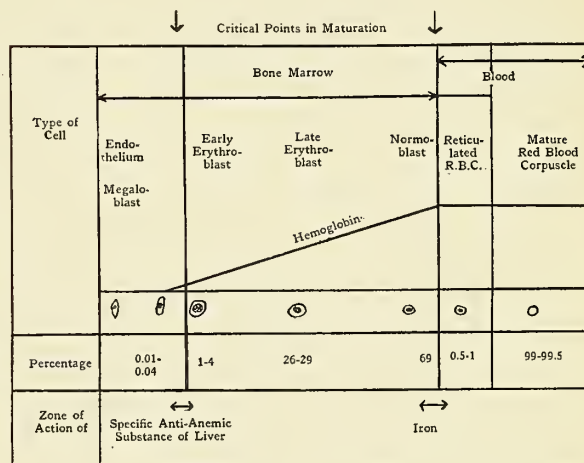


Chart I. Demonstrates the development of the red blood cell and the points at which maturation defects may occur (after Sabin modified by Haden).

cyte. In the red series the parent cell after the primitive endothelial cell is the megaloblast and by division forms the early erythroblast which gradually matures to form the normoblast and eventually the adult red cell. The granulocytes are normally formed in the bone marrow, the lymphocytes in the lymphoid tissue throughout the body and very rarely in lymphoid rests in the bone marrow, and the mononuclears in general from the reticulo-endothelium, and as the bone marrow contains much of this structure necessarily partially in the bone marrow. It is generally accepted now that the platelets are formed from the megakaryocytes of the bone marrow.

Deviating from the subject of leukopenia for a moment, I wish to refer briefly to Chart I, which demonstrates the development of the red cell from the primitive endothelial cell. At the levels marked by the double arrows are the points where maturation defects occur. In the one case the megoblast fails to divide and pernicious anemia develops, but when the anti-anemic principle, present in liver, is given, maturation takes place and normal cell development proceeds. In the other case the maturation factor, iron, is lacking and the normoblast is the end point. This chart simply demonstrates at what levels in the gener-

ation of the red cell the anti-anemic factors are effective and where maturation fails.

Sabin³⁰ has very clearly demonstrated the development of the granulocyte and by studying

Passing now to the consideration of leukopenia, I call your attention to the fact that the etiology is multiple. Arthur Wells³⁸ in the *Journal of the Missouri Medical Association* has

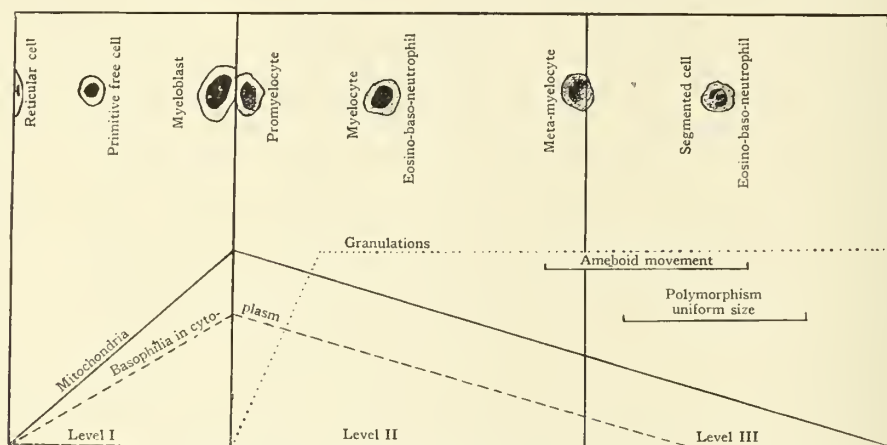


Chart II. Demonstrates the development of the white blood cell (after Sabin).

the accompanying Chart II it is seen how the primitive reticular cell gives rise to the primitive white cell which first develops mitochondria and basophilia in the cytoplasm, and finally granulations. It is noted that the dash curve, signifying basophilia, carries into the third division, indicating that with rapid development of the leukocyte there is basophilia of the cytoplasm, a fact which is so often noted in toxic states. Ameboid activity of the white cell begins about with the metamyelocyte and carries on when the cells reach the peripheral blood, division no longer taking place, and eventually the cells pass into the non-motile senile phase and are destroyed.

I have said above that normally in adult life the bone marrow is the source of the granulocyte, erythrocyte, and thrombocyte. At birth the bone marrow throughout the skeletal system is red active bone marrow. If great stress and strain is placed upon the infant, secondary centers in the liver, spleen, and kidney may take over the hematopoietic function. As the individual matures, marrow becomes less active, until in the adult, yellow marrow has occupied the greater part of the bony system and under normal circumstances red active hematopoietic marrow is found only in the ribs, sternum, clavicle, vertebræ, bones of the skull, and the innominate bone.⁶

stated that the following drugs and conditions could give rise to leukopenia:

Drugs

atropine
camphoric acid
ergot
picrotoxin
tannic acid
menthol
phenylhydrazine
sulphonil
thorium
benzol
arsphenamine
amidopyrine
dinitrophenol
bismuth
mercury
gold salts
lead
arsenic
ether
alcohol
morphine

Miscellaneous

multiple myeloma
metastatic carcinoma
of bone
osteosclerosis
catarrhal jaundice

Septic States

pneumonia
perinephric abscess
lung abscess
osteomyelitis
military tuberculosis

Blood Dyscrasias

aplastic anemia
aleukemic leukemia
pernicious anemia
primary splenic anemia
Banti's disease
Gaucher's disease

Granulomata

syphilis
tuberculosis
glanders
actinomycosis
leprosy

Infectious Diseases

mumps
measles
chicken pox
influenza
typhoid fever
malaria

I do not pretend to be able to explain all of these conditions, nor do I hope to definitely explain more than a few. In some cases toxic factors, in other maturation factors, and still others mechanical factors enter into the cause of the leukopenia. Gottlieb¹¹ indicates that the reticulo-endothelial system exerts an inhibitory

action upon the marrow as in those diseases where there exists reticulo-endothelial hyperplasia such as typhoid fever.

Minot²⁶ has carefully studied the relationship between various blood dyscrasias and has suggested that there are certain definite entities, although there may occur borderline cases. Lescher and Hubble,²³ Chart III, in reviewing agranulocytosis and leukopenia in general, stress the fact that one, or more than one part of the myeloid series may be involved. Fred Stenn³³ suggests an inter-relationship between myeloid diseases. Thus, it is apparent that any or all parts of the bone marrow may be affected at one time, or progressively in any order whatsoever. Leukopenia may occur, therefore, in dyscrasias involving the granulocyte alone or involving the red cell or the thrombocytes, singly or together. The differentiation of these conditions, as I hinted in my opening paragraph, could each entail a separate paper. Haden,¹² proceeding farther, offers the following classification of granulopenias or neutropenias. However, as will soon become apparent, not all cases fit into this classification.

Classification of Granulopenia

- I. *Granulopenia* with decrease in erythrocytes and thrombocytes from aplasia or hypoplasia of all bone marrow cells due to:
 1. Infection.
 2. Radiant energy.
 3. Chemicals as arsphenamine or benzol.
 4. Disease of the spleen as Banti's disease.
 5. Unknown causes (idiopathic).
- II. *Granulopenia* due to mechanical interference with delivery of mature granulocytes in:
 1. Hyperplasia of myeloblastic tissue with leukemia or myeloma.
 2. Hyperplasia of erythroblastic tissue in pernicious anemia.
- III. *Granulopenia* due to selective interference with multiplication, maturation or delivery of granulocytes from the marrow by:
 1. Chemicals as amidopyrine and phenobarbital.
 2. Allergic reactions.
 3. Infection.
 4. Radiant energy.
 5. Unknown causes (idiopathic).

This, then, brings us to a brief discussion of agranulocytosis, the name applied to this condition by Werner Schultz³² in 1922. Other names including agranulocytic angina, granulopenia, granulocytopenia, neutropenia, malignant neutropenia, neutrocytopenia, and pernicious leucopenia have been suggested. Brown³ reported a

case before this in 1902, but did not designate it by that name. According to Pepper²⁷ and to Stenn³⁴ the condition had existed in the nineteenth century and both authors indicate that Gubler had reported such a case in 1857, as

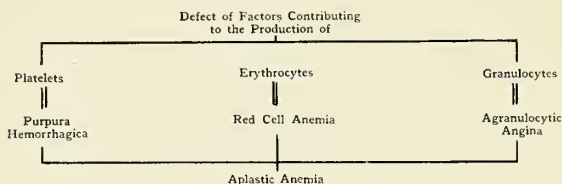


Chart III. Demonstrates the inter-relationship between various parts of the myeloid system (after Lescher and Hubble).

had other clinicians during the latter part of that century. They also note that Mackenzie in his text on "Disease of the Pharynx, Larynx, and Trachea" described the condition putrid sore throat, a disease usually fatal, and which both Pepper and Stenn apparently are inclined to believe was agranulocytosis. The term "putrid sore throat" is doubtless familiar to the older clinicians.

Glancing again at Haden's classification of neutropenia, we find we must consider agranulocytosis under the heading dealing with neutropenia, but without involvement of the other myeloid elements. It is noted that in agranulocytosis there occurs a marked decrease in the granulocytes and secondarily in the other white cells of the blood. There is little, if any, decrease in the red cells and ordinarily no change in the thrombocytes. This, then, presents us with the etiologic factors of allergy, chemicals, and radiant energy, infection, and idiopathic conditions. A further subdivision into primary or idiopathic and secondary types is necessary. Frankly, the etiology of the idiopathic type is unknown although the belief is rapidly spreading that here a maturation factor or chemotactic factor is lacking.² This will be referred to below. The secondary type may be caused, as noted above, by various factors. Pepper²⁸ was among the first to suggest that allergy played a part. It has been known for some time that radiant energy may produce a profound leukopenia, and that such chemicals as benzol, arsphenamine, mercury, bismuth, and gold may likewise produce a leukopenia. In these conditions it is wise to remember that the pathological process may go farther with depression of all myeloid elements

and the development of an aplastic anemia. Thompson³⁵ and also Jackson and his coworkers¹⁶ have noted the relationship between agranulocytosis and menstruation. Profound and prolonged sepsis have resulted in agranulocytosis. During recent years particular attention has been directed toward amidopyrine and its allied drugs and to the barbiturates. Kracke²⁰ has produced neutropenia in the experimental animal with benzol and notes that the smaller the dose the more selective the myelocytic action. Kracke and Parker²¹ also cite fifty patients, forty-six of whom had taken amidopyrine alone or in combination with other drugs. Madison and Squier²⁴ report fourteen cases with a definite history of ingesting amidopyrine alone or with a barbiturate and interestingly enough administering amidopyrine to two of these individuals after they had recovered from the acute attack again produced a fall in leukocytes. They are inclined to believe that this is a manifestation of an allergic drug reaction. Jackson¹⁴ and Watkins³⁶ and numerous others have cited similar cases preceded by these drugs. An attempt to reproduce the disease in the experimental animal with these drugs has generally failed, although Madison and Squier²⁴ did produce the condition in one rabbit, and Kracke²⁰ has done so with benzol. Certainly the common belief today is that coal tar derivatives and barbiturates may produce the disease, but that an individual must either be sensitive to the drug or be predisposed toward a leukopenic state.

A few words relative to the pathology will be limited to the findings in the bone marrow. Here both aplastic and hyperplastic types of bone marrow have been described. Fitz Hugh and Krumbahr⁹ and Fitz Hugh, Thomas, and Comroe¹⁰ have indicated that there is a predominance of myeloblasts and believe that there is a "maturation arrest." Custer⁵ also states that there is a proliferation of myeloblasts with a failure of these cells to mature and with normal or increased red cell formation and slight hyperplasia of megakaryocytes. He believes that cases due to arsenicals and sepsis differ in that these present granular forms, but with evidence of degeneration. Jaffe¹⁸ noted that granulation decreased and that vacuolization and hyalinization and pyknosis of the nuclei occurred. Beck² believes that in one type we have a failure of maturation with myeloid aplasia and neutropenia

and that in the other type we have an arrest of maturation and peripheral neutropenia. In the first place a maturation factor is lacking and in the second a chemotactic factor is lacking.

Agranulocytosis occurs more commonly between the ages of forty and sixty and twice as often in the female as in the male. It is also noted by many observers that it occurs predominately in the upper and middle classes and more often amongst housewives, physicians, nurses, and those allied with the medical profession. Schultz³² described the onset as acute, with chills, high fever, prostration sore throat, and adenitis. As you know there is leukopenia, often profound, with little change in the other formed elements. I shall not discuss other phases of the symptomatology. Beck² has divided agranulocytosis into five clinical types, namely, (1) fulminating, which is rapidly fatal; (2) subacute, which may last one to three weeks; (3) recurring or relapsing, with two or more attacks over a long period of time and ending either in death, recovery, or progress to the (4) subchronic, which may last for one or more years; and (5) cyclic, which may occur at regular intervals over a number of years. An early diagnosis is essential for both prognosis and what treatment we have to offer. Robert and Kracke²⁹ state that an individual may live for seven days without granulocytes and then die. This indicates the importance of establishing a diagnosis. Kracke and Roberts^{22,29} have shown the interrelationship between its pathology and clinical symptoms by describing those cases with: (1) bone marrow onset, (2) blood stream onset, (3) clinical onset, (4) bacterial onset, and (5) granulocytes or death. Kracke²² definitely showed in one patient who had three attacks, that the leukopenia preceded the onset of symptoms. These workers have also stressed fatigue, weakness, and drowsiness as early symptoms of neutropenia.

A word as to treatment. Various remedies have been suggested. Jackson and his coworkers¹⁷ at Boston have strongly favored pentnucleotid as a therapeutic agent and cite cases to prove a reduction in mortality. Pentnucleotid must be given in 10 c.c. doses intramuscularly three or four times a day or in severe cases this may be supplemented by a dose of 10 c.c. in 100 c.c. of saline intravenously daily. It is of no value in the aplastic type of case. Jackson

states that the blood does not begin to respond with a leukocytic increase until the fourth, fifth, or sixth day (usually the fifth day). Blood transfusions are almost universally recommended, but Jackson and Parker¹⁵ claim that transfusions may depress the marrow and result in a greater degree of leukopenia. Arsphenamine, liver extract, and deep x-ray have also been used. Doan⁷ summarizes the treatment of over 372 cases in which forty-four received pent-nucleotid, the mortality being only 25 per cent in this group. This is demonstrated in the accompanying table.

Therapy	Cases	Deaths	Mortality %
Untreated	Many		90
Miscellaneous	178	133	74
Arsphenamine	33	24	72
Blood transfusions	53	34	64
Irradiation	64	34	52
Nucleotide	44	11	25

I now wish to briefly review the cases which have occurred in St. Luke's and St. Mary's Hospitals. In all, ten such cases have been diagnosed and of these two may be excluded from the diagnosis. A brief summary of these two records follows:

Case 1.—A white housewife, aged sixty-one and of German descent was admitted to the hospital September 21, 1935. She had been sick for five weeks prior to admission with skin lesions resembling pemphigus. These had appeared following a scratch by a cat. She had also received amytal compound before the leukopenia was noted. The patient developed a para-anal ulcer, and ran a temperature varying from 100 to 106 degrees. Blood cultures and agglutinations were negative. She was given pentnucleotid from September 22 to 27, and also three blood transfusions. Death occurred on September 28. Autopsy showed the bone marrow to be hemorrhagic in places with proliferation of reticular cells and with a diminished number of megalokaryocytes. The following table gives the blood findings in detail:

	HB	RBC	WBC	P	L	M	MLB	MLC	LB	PL
9/21	42	2,170,000	1500	1	93	2			4	
9/23	43	2,380,000	2000	7	93					
9/24	50	2,580,000	1720	2	94		1	3	72,240	
9/25	48	2,250,000	2000	1	96	1				
9/26	42	2,000,000	1600		94	2			8,750	
9/27	52	2,630,000	1200	1	93	1		1	4	
9/28	58	2,930,000	1350		97	1				

Here there was marked leukopenia, anemia, and progressive thrombopenia. It is my belief that this case falls more closely into the group of aplastic anemia and the clinician in charge mentioned this fact in his summary. Failure to study bleeding time and clot retraction and

other details make it impossible to differentiate this from purpura, although clinically there was no indication of this. It is possible that primarily this may have begun with neutropenia and that the other myeloid elements subsequently became involved, and it is equally possible one of the other myeloid elements was primarily involved.

Case 2.—A white girl, five years of age, was admitted to the hospital October 7, 1934. She had had cervical adenitis and anemia for two months, with some improvement. Cough had been present for eleven days prior to admission and she had been prostrated for two days. The tonsils were enlarged and covered with a gray membrane. The temperature range was from 101.4 to 104 degrees. Diphtheria anitoxin and one blood transfusion were given. Death occurred on October 8. At autopsy the bone marrow was not examined. Blood counts had shown the following:

October 7: Hb 48 per cent; r.b.c. 2,270,000; w.b.c. 1000 (only 11 cells all by lymphocytes counted).

October 8: Hb 85 per cent; r.b.c. 3,950,000; w.b.c. 200 (3 p.m.n., 69 lymphocytes, 29 lymphoblasts).

In this patient the history was of two months duration and there was marked anemia as well as leukopenia present. The cervical adenitis had been noted for two months. It is possible that this may have been a subacute type of neutropenia, but more likely should be classified as aleukemic leukemia.

There are two more cases to which I wish to call your attention.

Case 3.—A white woman, aged thirty-seven, was delivered by forceps after a long, hard labor, December 16, 1927. On December 20, she had a chill and her temperature rose to 105 degrees. By December 29, her condition had improved and was considered satisfactory. On January 16, she developed tonsillitis, cervical adenitis, and a temperature of 104 degrees. Diagnosis was made of agranulocytosis. The puerperal sepsis was diagnosed and treated with blood transfusions. An allonal tablet was given three times a day from December 20 to 24, when they were discontinued. Then luminal grs. 1½ three times a day and two allonal tablets at bedtime were prescribed. Death occurred January 19. The following table presents the blood counts in detail.

	HB	RBC	WBC	P	L	M	E	B
12/20	65	3,550,000	7,000	82	12	4	2	
12/21	65	3,160,000	19,500	90	7	3		
12/22	62	3,130,000	19,500	86	12	0	1	1
12/23	64	3,100,000	15,800	81	18	1		1
12/24	58	2,270,000	12,400	75	22	2	1	1
12/25	62	3,160,000	18,000	85	8	7		
12/26	58	2,740,000	10,900	85	12	3		
12/27	60	2,950,000	12,300	81	16	2	1	
12/28	60	3,000,000	9,800	66	27	5	1	
12/29	58	3,000,000	13,000	73	24	1	1	
12/30	60	3,000,000	10,000	75	19	6		
12/31	61	3,250,000	12,800	76	12	9	3	
1/2	60	3,186,000	10,700	81	11	8		
1/6	62	3,370,000	7,400	60	30	6	1	3
1/15	70	4,000,000	2,200					
1/16	65	3,600,000	1,400	6	90	3		
1/17			1,600	5	93	2		
1/18			1,100	5	94	1		

TABLE I. STATISTICAL RECORD OF EIGHT CASES OF AGRANULOCYTOSIS OCCURRING IN DULUTH

Sex	Age	Previous Medication	Therapy	Month	Result	Days Ill	Complete Blood Examination	History	Leukopenia Preceding angina
Male	22	Barbiturates and coal tar derivatives	Symptomatic	Sept.	Death	3	No. (W.B. C. Diff.)	Hematemesis, appendectomy and abscesses (1 month)	Yes, day previous
Male	50	?	Transfusion	May	Death	12	Yes	Poor health 1 year. Rheumatism 20 years.	?
Female	44	?	Tracheotomy Intubation Diphtheria Ant.	Sept.	Death	4-5	No. (W.B. C. Diff.)	Good	?
Female	54	?	Symptomatic	Oct.	Death	3	No. (W.B. C. Diff.)	Aching and stiff neck 11 days	?
Male	40	Allonal for several weeks	Transfusions Liver Pentnucleotide	Jan.	Death	21	Yes	Below par 2 to 3 months	?
Female	37	Barbiturates and coal tar derivatives	Transfusion	Jan.	Death	3	Yes	Puerperal sepsis 1 month	Yes, day previous
Female	49	?	Pentnucleotide	Nov.	Death	7	Yes	Good	?
Female	78	Phenobarbital amidopyrine for 2 months	Pentnucleotide	Feb.	Death	5	Yes	Rheumatic pains 2 months	?

It is worthy of note that here two factors may have contributed to the production of a neutropenia—sepsis with prolonged illness and the ingestion of coal tar and barbiturate products. An interesting point is that on January 15 she showed a leukopenia and the following day developed high fever and sore throat and cervical adenitis.

Case 4.—A white male, aged twenty-two, who had been working around his home painting and doing electrical work, was admitted September 10, 1933, with a history of crampy abdominal pain. The findings indicating appendicitis, the appendix was removed. Previous history showed he had had gonorrhea during the preceding six weeks and on one occasion had passed blood after a sound was passed. Three weeks prior to admission he had had an attack of abdominal pain with hematemesis of small clots. On September 21, 1923, the wound was found to be infected, on September 29 he developed testicular pain, and on October 2 there was a definite orchitis. He had also developed a right lumbar abscess. On October 15, a sore throat came on, with leukopenia and death occurred on October 18, 1933. Medications during hospital course included veronal grains on September 10; allonal every six hours on September 11, changed to every eight hours and twice at bedtime on September 12; pyramidon grain V once on October 13; phenacetin and salol aa grains X ordered every four hours on October 14; pentnucleotid on October 17. The

white blood count was 10,250 on September 1; 2,200 on October 14; 750 on October 15; 750 (100 per cent lymphocytes) on October 16; 350 (100 per cent lymphocytes) on October 17.

Again the same factors entered into the production of leukopenia, as in the preceding case. Note the use of pyramidon. It is regrettable, in this case, that further blood studies were not carried out for the hematemesis occurred several weeks prior to appendectomy. Here again the leukopenia preceded the clinical symptoms, fitting in admirably with the concept that neutropenia precedes the symptoms, i.e., that bone marrow and blood stream onset must come before the clinical onset.

Reviewing the eight cases (Table I), the following conclusions may be drawn:

1. The ages varied from twenty-two to seventy-eight years with an average of 46.75 years.
2. The ratio of females to males was five to three.
3. Coal tar products, either alone or with barbiturates, had been used preceding the attack in 50 per cent of the cases.
4. The treatment in addition to symptomatic

therapy consisted of pentnucleotid in three cases, transfusions in four, and liver extract intramuscularly together with pentnucleotid in one.

5. The seasonal incidence was interesting, the greatest being in the fall and midwinter months.
6. The mortality was 100 per cent, and with two exceptions the duration of illness was three to seven days.
7. The previous health had been poor in six cases and in two it had been good according to the history.
8. In three of these cases white blood counts and differential counts only had been done. There had not been a complete count.
9. In one patient there was a family history of allergy.

There are several important conclusions we may make from this brief survey of the literature and the cases of agranulocytosis which have been diagnosed in Duluth. They are:

1. A history of sudden onset with acute symptoms referable to the mouth and throat should lead to a consideration of agranulocytosis.
2. To make a satisfactory diagnosis, complete blood counts and studies should be made and, if possible, bone marrow biopsy.
3. If an individual has been ill for a long time or if his blood studies present signs of bone marrow exhaustion those drugs which may produce leukopenia should be avoided.
4. Finally, although much has been written on the etiology and pathology of blood dyscrasias, including agranulocytosis, much remains to be learned about them.

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THE EFFECT OF BAROMETRIC PRESSURE ON THE INCIDENCE OF CEREBRAL HEMORRHAGE*

A Preliminary Study

GORDON R. KAMMAN, M.D., F.A.C.P.

Instructor In Nervous and Mental Diseases, University of Minnesota

Saint Paul

SINCE the time of Hippocrates many investigators have suggested the existence of a possible relationship between climate, seasons, and sickness. That such relationships may exist is not surprising in view of the fact that the human organism is so complex and sensitive that it can be affected by a great variety of environmental changes, many of which are as yet unknown. From the beginning of life, protoplasm has been subject to innumerable daily, nay hourly, variations in its natural environment. These variations probably were taking place before the first protoplasm ever was formed, and matter born into such a changing environment must have the capacity to react to it. As old as any of the environmental forces affecting the protoplasmic mass is that of atmospheric pressure.

If protoplasm will react to changes in temperature, in hydrogen ion concentration, in oxygen tension, in electrical potentials, and in degrees of hydration and dehydration, it is very likely that it will react to changes in atmospheric pressure. If protoplasm in its *simplest* form possesses the capacity to react to these changes, it must follow that protoplasm in its most *complex* form, namely, the human organism, will react in a much more sensitive manner. Because of this extremely sensitive reactivity of our bodies, Peterson⁸ calls the human organism a "cosmic resonator." Stengel¹⁰ believes that atmospheric pressure, temperature, humidity, cloudiness, duration of sunshine, intensity of the rays, et cetera, do not act upon us independently but that our reactions are conditioned by the effects of all these forces operating simultaneously. Even meteorologists have recognized the effects of weather upon the human organism. Van Cleef¹² in the preface to his book, "The Story of the Weather," says, "Weather plays so critical a part in human endeavor, affecting health, happiness, industry, commerce and other phases of life, the

wonder is that most persons have not shown a greater desire to ferret out its secrets." After all, we are little animals living at the bottom of a vast sea of air just as some varieties of fish spend their lives in the depths of the sea water. It seems odd, that with all the investigations taking place in clinical physiology so little attention has been paid to the effects of meteorological changes in the human organism.

True, a few studies have been made, but as far as I can determine few, if any of them, have been subjected to critical statistical analysis. de Rudder³ believes that there is a definite connection between certain atmospheric disturbances (Durchzug Atmosphärischer Unstetigkeiten) and various diseases, among which are apoplexy and cerebral thrombosis. Fritschie⁵ examined thirty-five cases of pulmonary embolism and found that they occurred in unstable weather. Stengel,¹⁰ in studying the daily occurrence of apoplexy and cerebral embolism, noticed a grouping of cases under certain climatic conditions. Palmer⁷ was impressed by the severity of vertigo during hot weather, especially in the humid, so-called dog-days. He cited one patient who seemed to be especially troubled on such days and prepared a chart correlating the attacks of vertigo with the temperature and humidity curves, suggesting that on days when there is a high relative humidity, the body loses heat and moisture with difficulty, the surface capillaries are dilated, and the blood pressure is lower than customary. A number of observers^{1,11} have pointed out that the mortality from hemorrhage, thrombosis, embolism and heart disease combined is high when the temperature is low, and low when the temperature is high. Stock¹¹ made a correlation between atmospheric pressure and deaths from circulatory disease and found a condition coefficient of 0.19 ± 0.06 which indicates a small but significant relation between atmospheric pressure and deaths from circulatory disease.

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It is only by studying meteorological conditions singly, however, and attempting to correlate them with individual types of human reactivity that reliable information in this field can be obtained. When one contemplates the vast number of possible interrelationships between meteorological conditions and human reactivity as a whole, the problem of establishing scientifically accurate correlations assumes staggering proportions. Therefore, because there is such a wide variety of meteorological changes, and because the human organism possesses an almost infinite capacity to react to any series of changes, I have chosen but one type of meteorological change and one type of human reaction, namely, barometric pressure and cerebral hemorrhage as the subject of a statistical analysis. To serve general medical interest further, I have also tabulated certain other data in connection with a series of cases.

Meteorological Principles

For purposes of orientation, and to clarify some of the terms used in the following discussion, it is necessary merely to mention some elementary meteorological principles.

The atmosphere in which we live is a gas and therefore obeys all of the physical laws pertaining to gas. It expands and becomes lighter when heated, and contracts and grows heavier when cooled. It has weight, and, therefore, exerts pressure upon anything existing in it. The lower one descends into the sea of air, the greater the atmospheric pressure becomes, and at our sea level the pressure is between 14 and 15 pounds per square inch, or 29.92 inches of Hg. The atmospheric pressure measured in inches of Hg. is known as the barometric pressure. At different elevations above sea level corresponding to different parts of the earth's surface the pressure varies from that at sea level, so that at Minneapolis, Minnesota, the mean corrected barometric reading is 28.99 inches Hg. This varies from month to month throughout the year.

Our atmosphere is not stationary but moves in various directions. At the equator and for several degrees north and south of the equator where the earth is hottest, the air moves upward and there is no movement parallel to the earth's surface, i.e., no wind. This region is known

as the doldrums. To take the place of the air rising from the equatorial region, air rushes in from the north and south and this air flows parallel with the earth's surface. The winds so produced are known as the trades. In the temperate zone (United States) we have the westerlies which are said to be due to the earth's rotation. Nevertheless, while the prevailing winds in our latitudes are from the west, this does not mean that the winds *always* blow from the west. This variability in wind direction is due in part to the existence of large masses of air which differ in temperature and, therefore, in density or weight. These differences in density or weight result in differences in atmospheric pressure known as "lows" or cyclones, and "highs" or anti-cyclones. Obeying the law of physics, air will pass from an area of high pressure to an area of low pressure and create winds.

A "low" or cyclone is characterized by a flow of air inward around a moving center and such a moving center usually passes across the United States from West to East and usually north of an East-West line. These cyclones are a form of atmospheric activity which is quite normal and harmless and one passes across the United States on an average of every three or four days. The winds blow spirally upward and counter-clockwise. The word "cyclone" is merely the generic term for a large rotating air mass and is popularly confused with "tornado" which is something destructive and abnormal and entirely different.

A "high" or anti-cyclone involves a circulation of air, the reverse of that in a cyclone. The air moves spirally downward, outward, and in a clockwise direction. Since the air descends it is cold, and this is in contrast to the air which we find in the center of a cyclone or low. These highs generally move across the United States in an easterly direction, usually going south of an east-west line, and alternating with lows. They usually enter the country from Alberta and move leisurely south and east. Occasionally a high will enter from the Pacific Ocean, but two highs never follow each other in succession.

Since a high is characterized by descending air, and a low involves ascending air currents, the former is usually accompanied by a lower temperature, whereas the latter usually is associated with a higher temperature.

Effects of High Barometer on Human Circulation

Peterson⁸ has observed that when daily blood pressure reactions of normal persons or of patients suffering from a variety of diseases are studied, periodic fluctuations can readily be determined. These fluctuations seem to bear a distinct relationship to the meteorological status of the time. An increase in systolic blood pressure is usually associated with an increase in barometric pressure.

Shildebrand⁹ has demonstrated that the volume of the brain can be changed by changes in atmospheric pressure. If this is true, then the circulation of the brain may be changed, and if the circulation of the brain is changed, we may anticipate alterations in the medullary centers, i.e., respiratory rate and pressure levels. One need only to be reminded of Cushing's² classic experiments which show the existence of a regulatory center which is directly influenced by the circulation in the medulla, rise in blood pressure occurring *pari passu* with anemia of the medulla.

With the rise in barometric pressure, the systolic blood pressure and the pulse pressure reach a maximum either just before or some time after the highest barometric level is reached. As will be seen later in a statistical summary of the incidence of cerebral hemorrhage and high barometric pressure, it is necessary to know not only the barometric pressure reading on the day of the hemorrhage, but also the readings for the day previous. In this way it can be determined whether the stroke occurred in the presence of a rising or a falling atmospheric pressure. Many cerebral hemorrhages occurred when the barometric pressure reading on that day was lower than average, and if this fact alone were taken into consideration there would not be any significant statistical correlation between barometric pressure readings and cerebral hemorrhage. However, if the problem is considered dynamically, i.e., by taking into consideration whether the barometer is rising or falling at the time of the hemorrhage, I will show later that a statistically significant correlation may be possible. It is theoretically possible that deaths from cerebral hemorrhage or thrombosis are definitely weather conditioned, for quite obviously a small arterial defect is more likely to rupture when the blood

pressure is high; and the systolic pressure is highest during barometric highs.

Selection of Material

The records of autopsies on cases of cerebral hemorrhage in the Department of Pathology at the University of Minnesota were selected for this study because they contain the autopsy reports from the two largest hospitals in the state—Ancker in Saint Paul, and Minneapolis General Hospital in Minneapolis—as well as from numerous private hospitals in both cities and the University Hospitals. Cases in which the cerebral hemorrhage was associated with trauma, epilepsy, syphilis, alcoholism, sepsis, bacterial endocarditis, jaundice, and blood dyscrasias such as leukemia and hemophilia as well as spontaneous subarachnoid hemorrhage and cerebral hemorrhage of the new born were excluded from the series. The records were carefully selected in this manner in an effort to study only cases in which all factors other than atmospheric pressure change and disease of the blood vessels have been excluded. Obviously atmospheric pressure could have but little to do with the cerebral hemorrhage due to a laceration of the brain from a fractured skull and it isn't likely to be a factor in the cerebral hemorrhage of the new born. Furthermore, cerebral hemorrhage during an epileptic seizure is just as likely to occur during periods of falling barometric pressure as with a rising barometer. By the same token, hemorrhages associated with the other conditions mentioned above should be excluded.

Beginning with the record of the last autopsied cerebral hemorrhage that was acceptable for study (October 4, 1935), the records were worked back through until a series of 150 cases had been obtained. This took us back to September 19, 1927. From a statistical standpoint, even with careful selection of cases for consideration, there are some undesirable features. First, we are considering only known cases of cerebral hemorrhage, and cases which came to autopsy. This does not take into consideration hundreds of unknown cases, and many known cases which did not come to autopsy. Second, and probably more important, is the fact that on the basis of autopsied cases we have no way of telling how uniform our sampling is. In other words, many of the victims of cerebral hemorrhage were picked up unconscious on the

street and brought by the police to the hospital where they died in a few hours. We must concede that these cases and other cases dying within a relatively short time after the cerebral accident are more likely to come to autopsy than those who retained consciousness and lived for a longer period of time after the original insult. Here we must recognize the human element, for relatives would not be as likely to grant permission for autopsy in the latter group of cases as in the former. However, even with the possibility of poor sampling there still appears to be a relationship between cerebral hemorrhage and rising barometric pressure.

Analysis of Cases

Age and Sex Distribution.—In the series of 150 cases, eighty-seven (58 per cent) were males and sixty-three (42 per cent) were females. The average age for males was 58.0 years, and that for females was 55.39 years. The greatest percentage of deaths from cerebral hemorrhage occurred during the seventh decade in men, and during the 5th decade in women.

Side of Brain Involved.—Many of the cases had had one or more previous strokes. The side or part of the brain affected by the last cerebral accident probably is a question of only academic interest. However, these cases are summarized in Table I.

TABLE I

	Cases	Per Cent
Right side	71	47.4
Left side	60	40.0
Pons	9	6.0
Cerebellum	4	2.6
Bilateral	3	2.0
Undetermined	3	2.0
Total	150	100.0

Weight of Heart.—Because some of the autopsies were limited to the head, the heart weight was observed in only 146 out of the 150 cases. Either a heart weight of over 450 gm. or a ventricular hypertrophy was found in 53.9 per cent of the women. Either a heart weight of over 500 gm. or a ventricular hypertrophy was found in 52.8 per cent of the men.

Rising or Falling Barometer.—Other investigators on this subject^{1,11} have taken into consideration only the barometric pressure reading on the day on which the cerebral hemorrhage occurred. However, this series indicates that

the *direction* in which the barometer was moving is the real factor, because half of the cerebral hemorrhages occurred when the barometric pressure was below the normal mean for that month. Therefore, if the barometric pressure only on the day of the hemorrhage were taken into consideration, from this series it would be impossible to draw any conclusion as to its significance in the incidence of cerebral hemorrhage.

On the other hand, if one considers the direction in which the barometer was moving, one finds that it was rising in eighty cases, falling in sixty-five cases, and stationary in five cases. In other words, there was a change in barometric pressure in 145 out of the 150 cases. In 55.2 per cent it was rising, and in 44.8 per cent it was falling. This small percentage in favor of a rising barometer is still too small to be of any statistical significance, and if nothing further were considered we would still be left without a hint or suggestion as to whether a rising barometer has anything to do with the frequency of cerebral hemorrhage.

However, there are certain groupings of the degree of change in barometric pressure readings. One finds that a trace of a fall occurs twice as often as a trace of a rise, whereas a great rise occurs eight times as frequently as a great fall. Therefore it seems that, even if our data is not sufficient to study the relationship be-

TABLE II

Rise:	Actual Range	Class Center	Frequency
Great .....	.50 - .80	+.65	8
Marked ....	.30 - .50	+.40	14
Moderate ..	.20 - .30	+.25	18
Mild .....	.10 - .20	+.15	18
Slight .....	.05 - .10	+.075	12
Trace .....	.00 - .05	+.025	10
Fall:			
Trace .....	.00 - .05	-.025	20
Slight .....	.05 - .10	-.075	17
Mild .....	.10 - .20	-.15	15
Moderate ..	.20 - .30	-.25	7
Marked ....	.30 - .50	-.40	5
Great .....	.50 - .80	-.65	1
			145

tween the incidence of cerebral hemorrhage and barometric pressure by actual statistical methods of correlation, an approach to the problem may be made by studying the frequency distribution of the change in barometric pressure during the twenty-four hour period preceding the day on which the hemorrhage occurred. Table II sets forth the frequency distribution.

This frequency distribution is graphically portrayed in diagram "A."

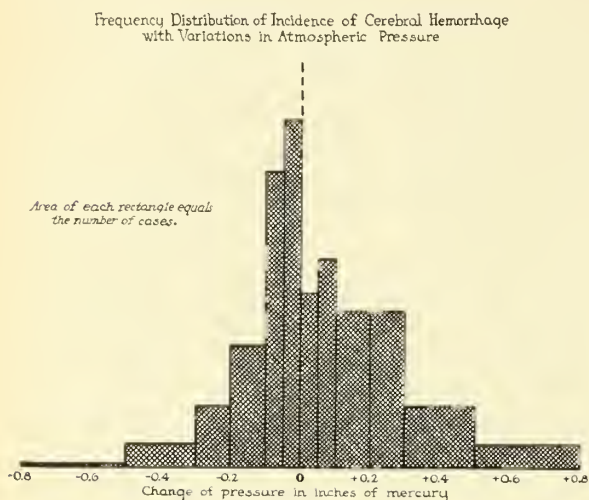


Diagram A.

By computation from this table one finds that the average change in barometric pressure for the twenty-four-hour periods preceding days on which cerebral hemorrhage occurred is $+ .074$ inches of Hg. Obviously since the general level of atmospheric pressure is not changing over long periods of time, the theoretical average change for all days in extended time would be zero. The series of 145 cases considered, therefore, indicates that cerebral hemorrhage is associated with periods of increasing barometric pressure. To test the significance of this deviation from zero one should know the frequency distribution change in barometric pressure for twenty-four-hour periods through extended time. Unfortunately this is not available at this time. It would be reasonable to assume, however, that the standard deviation of that distribution would not, if at all, markedly exceed that of the distribution in the above table. The standard deviation in the table, when calculated mathematically, is 0.2426 , giving a standard error of the mean of $\pm .0202$. Since 0.74 is more than three times greater than the standard error, it appears entirely reasonable to expect that the value would be proven statistically significant if the data on barometric change in extended time were available.

Summary and Conclusions

1. Previous investigations have suggested that there is a possible relationship between the

incidence of cerebral hemorrhage and changes in atmospheric pressure.

2. There is much evidence to show that a rise in atmospheric pressure is accompanied by a rise in systolic blood pressure.
3. In an effort to ascertain whether or not the incidence of cerebral hemorrhage is affected by changes in atmospheric pressure a series of 150 cases proven at autopsy were studied. Cases associated with trauma, epilepsy, syphilis, alcoholism, sepsis, bacterial endocarditis, jaundice and blood dyscrasias, such as leukemia and hemophilia, as well as spontaneous subarachnoid hemorrhage and hemorrhage of the new born were excluded from the study.
4. There are some undesirable features of using only a limited number of autopsied cases for statistical purposes and these features mar the quality of the sampling in this series.
5. In addition to atmospheric pressure changes, other data, such as age incidence, sex, part of the brain involved, and heart weight were tabulated and summarized.
6. It was found that 58 per cent were males and the average age for males was 58 years; 42 per cent were females and the average age for females was 55.39 years.
7. The heart weight was increased or the left ventricle was hypertrophied in 53.3 per cent of all cases (52.8 per cent of males and 53.9 per cent of females).
8. The average change in barometric pressure for the twenty-four-hour period preceding the day on which cerebral hemorrhage occurred is $+ .074$ inches Hg. This is considered as a "slight" rise. It is reasonable to conclude, therefore, that cerebral hemorrhage is associated with periods of increasing barometric pressure.
9. A larger series of cases as well as further meteorological data are necessary before the statistical significance of the deviation $+ .074$ can be mathematically tested.

I wish to express my gratitude to Mr. M. R. Hovde, Government Meteorologist at Minneapolis, for permission to review the meteorological records covering the periods during which the cerebral hemorrhages in this series occurred, and also for his valuable suggestions concerning the table used to denote the various degrees of barometric change. I also wish to express my deep

appreciation to Dr. Alan E. Treloar, biometrist at the Graduate School of the University of Minnesota for his interest and assistance in the statistical calculations and deductions.
1125 Lowry Medical Arts Building.

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TRAUMATIC ARTHRITIS*

JAMES MORROW, M.D.
Austin, Minnesota

TRAUMATIC arthritis is rather an indefinite term and in itself implies nothing as to the character, origin or duration of the inflammation of the joint or joints involved. Therefore in this paper I have found it necessary to divide the subject into acute traumatic arthritis and chronic arthritis; and to further subdivide the chronic form into a proliferative and degenerative type, which correspond to the so-called hypertrophic and atrophic forms.

It is further my intention to discuss essentially that form of traumatic arthritis which follows injury to a joint or joint surface, without co-incident joint fracture. I believe it is beside the point to enter into any discussion of traumatic arthritis that may result in consequence of a fracture through a joint which has imperfectly healed; that such an arthritis does exist is not doubted. Nor at this time need we consider those arthritic conditions which do come following repeated strain or stress on a joint surface, for we know that such changes do take place following repeated traumatisms, even though of mild degree, and where the symptoms are not connected immediately with such trauma. But it is extremely questionable if all the cases parading under the classification of traumatic arthritis are actually due to trauma, and difficulty arises when a chronic ailment of a joint is claimed to be due to a specific injury.

Therefore the questions as to whether or not a specific injury alone produced an arthritic change

in a joint must be carefully weighed. Each year, as personal injury suits in our courts increase in number, the number of people claiming a permanent dysfunction of a joint following trauma likewise increases and the question has become of real importance to the physician or surgeon called upon to render his opinion in our courts.

When we consider that as high of 90 per cent of all persons more than forty-five years of age have some form of articular disease,⁹ chiefly of the degenerative type, we have an indication of the timeliness of this consideration.

All cases of primary traumatic arthritis which are claimed due to a specific accident, must first present acute symptoms, and must develop an inflammatory condition which is the result of injury to the involved joint. Moreover, this involved joint must be the only joint showing such symptoms of inflammation.¹⁰ During the course of this inflammatory change, there will be injection of the synovial membrane and cartilaginous surfaces, serous or bloody effusion into the joint. The joint will be swollen and painful, and there will be joint dysfunction. Bick² makes the pertinent statement that "a diagnosis of traumatic arthritis cannot be justified in the presence of normal joint function."

Thus the first pathological change in traumatic arthritis is a synovitis. This primary condition, as in the case of simply acute synovitis, may regress from this acute stage and the condition entirely clear up without any permanent disability.

The question of the degree of the trauma frequently is the all-important decision to be made.

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Obviously the trauma must be severe enough to set up inflammatory reaction in the joint involved. Axhausen¹ is of the opinion that the injury must be severe enough to cause cartilaginous damage and Englehardt⁶ states likewise. Blencke³ believes that the trauma must be of sufficient intensity to cause permanent changes in the cartilage of the joint. Regardless of whether or not we agree with the above writers, it should be generally conceded that the trauma must be severe enough to have set up acute symptoms in the joint involved. It hardly seems permissible to maintain that any specific injury is the causative agent in a claimed case of traumatic arthritis, when the injury was not severe enough to set up local inflammatory changes (healing reaction) in the joint involved, with or without damage to and changes in the cartilage.

Assuming the injury has been severe enough to have caused local inflammatory conditions, and that complete healing from the primary condition has not occurred, then we may have a major or minor amount of permanent change in the joint, with a greater or lesser degree of permanent disability.

The changes found in this progressive type are usually similar to the changes found in hypertrophic arthritis. Following the acute stage of synovial injection, swelling and effusion, there is a disappearance of the joint cartilage, a thickening and fibrosis of the capsule, a thickening of the synovial membrane, and the production of osteophytes around the articular margins. Thus we have an end-result in which it is hard to distinguish between a hypertrophic arthritis without injury, and a traumatic arthritis. Doub⁵ states "it is quite evident that hypertrophic arthritis and traumatic arthritis are similar roentgenologically, and to differentiate them one must have recourse to the history and physical examination in addition to the films." Further,⁹ "a diagnosis based on x-ray findings alone, not knowing the duration of the disease, is in error."

The history must show that there was specific trauma, and that it was of sufficient degree to cause acute changes in the joint involved; the destructive progress must be limited only to the joint injured, and the interval of time must be within reasonable limits. Three to six months is the ordinary space of time for a joint to show clinical and roentgenological changes. How-

ever, occasionally changes will be found earlier than 3 months, as in the report by Ewald⁷ of changes being found after six weeks in a joint known previously to be normal. This is, however, an exception to the general rule. The less severe the acute symptoms the later may changes be expected. It is extremely doubtful, however, that changes not appearing before eighteen months following an accident can be attributed to the accident. The incidence of percentage of hypertrophic type of traumatic arthritis is also distinctly to be considered. Zollinger¹⁴ in a series of 124,000 cases with the same type of injury was able to establish a relationship between trauma and hypertrophic arthritis in only eighteen cases, or in a ratio of 1 to 6,888.

In the consideration of the relationship of trauma to the atrophic type of arthritis, I wish to bring out that there is a distinct type of acute traumatic bone atrophy (Sudeck's atrophy). This disease is noted for the fact that the atrophy most generally occurs in the extremities, and in the bones distal to the injured area. What we are considering here is the development of an atrophic arthritic condition involving the bone or bones making up a specific joint, to which a single trauma has been applied. Cotton⁴ states that it is very doubtful whether it is possible to have, given predisposition only, a fresh arthritis of the atrophic type, due to trauma. Quirin believes that there can be a relationship between degenerative arthritis and a single trauma only if the trauma has been severe enough so that the patient cannot continue working immediately following the accident. It is quite probable that most of the cases that are thought to be atrophic arthritis following a single trauma, are in reality the results of disuse of the bone, with the resulting atrophy of disuse. "Whenever an extremity is immobilized, there is a tendency for bone atrophy to occur."¹¹ Immobilization may not necessarily mean mechanical fixation, but actual lack of use due to pain on motion. Further it is a common occurrence to note a return to normal condition in the bone following disuse atrophy, when the individual regains the use of the affected part.

The question of the aggravation of a preexisting arthritis by a single specific trauma is one which also frequently arises. The cases so involved are usually of the hypertrophic type in

persons past middle age. Hypertrophic arthritis is usually encountered among persons more than forty-five or fifty years; it is symptomatically evident in the examination of about 5 per cent of these people.⁹ It is noticeable that the claimant in our courts or the workman seeking compensation develops the condition following some injury, whereas the housewife, the unemployed, the farmer, and those that are not covered by either workmen's compensation or involved in any personal injury claim, develop the same condition without injury. The statement by the patient that prior to some specific accident he had no abnormalities in his joints, does not constitute proof that prior to that accident his joints were normal.

That trauma can aggravate a preexisting hypertrophic arthritis under certain conditions is rather generally conceded. These conditions are that the injury must have been severe enough to have caused an arthritic condition in an otherwise normal joint.^{6,8,13} Bick² believes that the claim that the injury aggravated a preexisting arthritis is tenable only if it can be proven that the joint affected by the trauma has increased in the arthritic process more rapidly than other preexisting arthritic joints. This would mean that there would have to be a comparison between films made immediately following the injury and films taken not less than six months subsequently. The observation of Zollinger¹⁴ that "in the case of an exacerbation of an already existing arthritis (deformans) the trauma cannot be regarded as responsible for all later symptoms which may possibly be increasing" is well worth remembering.

Probably the most common site for trauma to cause aggravation of a preexisting hypertrophic arthritis is in the lower thoracic and lumbar vertebræ. Laboring men of fifty years or beyond frequently show signs of marked hypertrophic changes in these vertebræ without any symptoms; other individuals present themselves with much less change from normal as shown in films, but with definite symptoms of a disabling condition. That a trauma severe enough to have created sufficient pull on the ligament involved may tear off periosteal attachments and excite an increased proliferation of bone cells at the site of such injury, is entirely possible. But to assert that such trauma is the sole cause of the result-

ing disability, seems to me to be unjust. I believe that the disability should be evaluated on the degree of difference that is shown to exist between the injured joint with its increased proliferation, and the uninjured neighboring joint which shows hypertrophic changes without the active proliferation. True, the symptoms come from the fact of increased proliferation due to the injury; but how can one justly say that a similar or greater degree of disability due to changes in numerous joints, might not have followed in an indefinite period of time, without any injury?

So far I have made no mention of the case of acute infectious arthritis. My main reason for this apparent oversight is because very rarely do we have any trauma, severe enough in itself to have caused an arthritis, occur in a joint already involved in an acute infectious arthritis. The morbidity of the patient, his natural desire to limit motion because of the resultant pain, his inactivity, all lessen the opportunity for him to be accidentally injured. No one, I believe, would claim trauma to be the sole cause of any infectious arthritis, nor do I believe that many would question the statement that, given definite foci of infection, an acute infectious arthritis might not be induced in a joint subjected to any injury severe enough to have caused articular or synovial injury. In the rather rare case when injury is superimposed on an existing acute infectious arthritis, the reaction occurs very promptly, with increased heat, swelling, redness, stiffness, tenderness, pain and some rise in temperature.

Conclusions

Considering those cases wherein a single specific trauma, not associated with fracture through a joint, is claimed to be the sole cause of a disability, certain fundamental criteria are summarized:

1. A diagnosis of traumatic arthritis should not be made without due consideration of the severity of the injury sustained and of the clinical course which followed.
2. A diagnosis of traumatic arthritis on roentgenological interpretation alone is not justified.
3. A diagnosis of an aggravation by trauma of a preexisting arthritis can be justly made only under certain conditions; the extent of the ag-

gravation by the trauma should be fairly evaluated.

4. A diagnosis of traumatic arthritis should never be made in any case simply as a casual admission of indecision.

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DIAGNOSTIC SIGNIFICANCE OF HEMOPTYSIS*

H. CORWIN HINSHAW, M.D., Ph.D.

Rochester, Minnesota

IT will not be profitable to consider or even to enumerate all the possible causes of hemoptysis. There are diseases in which expectoration of blood is of secondary importance, when other symptoms are present to establish the diagnosis. I shall refer to those conditions in which hemoptysis is an initial symptom, or an isolated symptom, and will refer particularly to diseases which are so commonly confused with pulmonary tuberculosis.

Tuberculosis

Tuberculosis is the commonest cause of hemoptysis because tuberculosis is such a common disease, but the spitting of blood alone is not sufficient evidence on which to base a diagnosis of tuberculosis. To justify such a diagnosis there must be either roentgenologic signs of the disease, or the bacilli of tuberculosis must be demonstrated in the sputum.

In authoritative reference books the statement is usually made that all obscure cases of hemoptysis should be regarded as tuberculosis. I do not believe that this conclusion is logical or correct. Although exhaustive investigation may be required to determine the actual cause of hemoptysis, the expense and effort are justifiable. Under no circumstances could this be as expensive or as laborious as treatment of the supposed or actual tuberculosis. The diagnosis of tuberculosis can

be satisfactorily excluded by properly taken roentgenograms, expertly interpreted, and by repeated examinations of the sputum.

As the destructive tuberculous process advances in the lung, it usually effectively causes thrombosis of all vessels well in advance of the zone of caseation. All physicians have seen at necropsy how large cavities may be traversed by the firm cords and strands of thrombosed vessels. Tremendous destruction may proceed without the external loss of blood.

Estimates differ, but it may be safe to state that about a third of patients who have tuberculosis bleed before the diagnosis has been established. Perhaps two-thirds will bleed at some time during the course of the disease. Some patients tend to bleed repeatedly, even though the disease is not clearly progressive. Men may be somewhat more prone to bleed than women. Some investigators have reported that hemorrhage occurs more commonly among patients whose blood pressure is somewhat above the low figure usually noted in cases of tuberculosis. It has frequently been noted that hemorrhages occur in "crops," several patients suffering from hemorrhage at about the same time. This has been variously attributed to atmospheric conditions, or to outbreaks of respiratory infection in an institution. Some patients can predict a hemorrhage by a feeling of tightness in the chest.

Hemorrhage in cases of tuberculosis is rarely fatal at first. Fever is an almost invariable se-

*From the Division of Medicine, The Mayo Clinic, Rochester, Minnesota. Read before the meeting of the Southern Minnesota Medical Association, Albert Lea, Minnesota, August 31, 1936.

quel. Too frequently this sequence continues, and the roentgenogram reveals evidence of soft, fluffy, exudative infiltration, which represents bronchogenic spread of the disease. Sometimes extensive tuberculous pneumonia follows a hemorrhage and ends fatally. It is sometimes possible to look at a film and state that hemorrhage has occurred recently, because of the peculiar type of shadow seen in the newly involved regions. Such extensions are much more to be feared than death from loss of blood.

Bronchiectasis

I know of no disease more likely to produce bronchial bleeding than bronchiectasis. I know of no pulmonary disease so likely to exist for years in subdued form. I know of no disease of the chest in which methods of physical diagnosis may be so fruitless. I know of no chronic pulmonary disease so likely to yield a negative or nonspecific roentgenologic picture. In other words, it is possible for a patient whose respiratory symptoms are minimal, who is apparently in perfect health, and of whose chest a roentgenogram is negative, to be suddenly seized by a pulmonary hemorrhage caused by bronchiectasis.

The textbook picture of advanced bronchiectasis is of rare occurrence. It is unusual for bronchiectasis to progress to this stage. It is an exceedingly common disease; much "chronic bronchitis" is of bronchiectatic origin. In about half of the cases in which the diagnosis is bronchiectasis, hemorrhage has occurred, and in most of these cases a diagnosis of tuberculosis has been made at some time. Some patients have spent protracted periods in sanatoriums at great loss of time and money. I have often wondered if any of these patients have ever contracted tuberculosis in a sanatorium.

The bleeding of bronchiectasis may be an early symptom and the first evidence of pathologic changes in the lungs. The amount of blood lost usually is small, but it may amount to several ounces. There are no clinical features that will distinguish this hemorrhage from that of tuberculosis. It is often repeated many times and is a source of great concern although general health may be unimpaired. Usually there is an associated history of expectoration of purulent sputum, and when the patient is inverted he will be able to expectorate purulent material on request.

The accurate diagnosis depends on bronchos-

copy and the study of roentgenograms after injection of opaque substances into the bronchi. When bronchoscopy is available it should be carried out if symptoms warrant because it may reveal bronchial stricture, foreign body or neoplasm, and may indicate clearly the therapeutic approach. It is especially important to regard all instances of unilateral bronchiectasis with suspicion.

Pulmonary Abscess

It is well to recall that the onset of abscess of the lung may be as insidious as that characteristic of tuberculosis. Hemorrhage may be a prominent and dramatic symptom. It is not unusual erroneously to suspect tuberculosis in cases of abscess of the lung. The roentgenogram may not clarify the situation. Abscesses of the upper lobe may be mistaken for tuberculosis by roentgenologists. Bronchoscopy may be required to prove the diagnosis, after repeated examinations of the sputum have eliminated the presence of tuberculosis. Bronchoscopic treatment may yield a remarkable cure in suitable cases.

Carcinoma of the Bronchus

There can be no doubt about the actual increase in incidence of primary carcinoma of the bronchus. Hemorrhage may be an early and a prominent symptom. Not infrequently it is the symptom which causes the patient to consult a physician. More than half of all carcinomas of the bronchus bleed before the diagnosis has been established.

The clinical recognition of bronchial carcinoma is difficult in early stages. Symptoms may be slight or confusing. An irritative cough, progressive dyspnea and hemoptysis afflicting a previously well person of "cancer age" should arouse suspicion. An insidiously developing abscess of the lung, if the patient is at this age, should be considered a carcinoma until proved otherwise.

The earliest physical findings are those of partial bronchial obstruction with decreased, muffled, or absent breath sounds, perhaps associated with a normal percussion note. A roentgenogram may reveal the growth or an area of atelectasis produced by the bronchial occlusion. Often the roentgenologic appearance is essentially that of an abscess developing distal to the bronchial occlusion. Bronchoscopy and biopsy are usually required before a positive diagnosis can be made.

Pulmonary Infarction

Physicians are learning that nonfatal pulmonary embolism is of common occurrence in diseases which require either surgical or medical treatment. The classical excruciating pain may be absent, or the pain may be of no greater severity than that of pleurisy. The first conspicuous evidence of pulmonary infarction may be the coughing up of blood. The clinical situation in general should lead the attending physician to suspect pulmonary infarction. Electrocardiography may reveal a specific type of tracing. Roentgenograms may be of little assistance. It is not likely that pulmonary infarction would be confused with tuberculosis.

Conclusions

1. The appearance of hemoptysis is indica-

tion for thorough investigation to determine the exact etiology.

2. Although tuberculosis continues to lead as a cause of hemoptysis, it is no longer proper to make such a diagnosis without roentgenologic evidence of tuberculosis, or without the positive evidence of bacilli of tuberculosis in the sputum.

3. Bronchiectasis is a disease which often leads to bronchial bleeding. It may exist with insignificant symptoms. It may exist without detectable change in the roentgenogram. It may be compatible with apparently excellent health.

4. Carcinoma of the bronchus is increasing in incidence. Hemoptysis may be an initial symptom, preceding any other evidence of disease.

5. Bronchoscopy, often with biopsy, will be required to determine the etiology in many cases in which bronchial hemorrhage is present.

NONSPECIFIC, NONMALIGNANT LESIONS OF THE VAGINA AND UTERINE CERVIX*

MONTE C. PIPER, M.D.

Rochester, Minnesota

CHRONIC lesions of the uterine cervix which may be associated with erosion include eversion, ectropion, and cystic degeneration.

Cervical Erosion, Ectropion and Cystic Degeneration

The term "erosion" is probably a misnomer, for it is said to have been adopted because of the raw or denuded appearance of the lesion. The surface is not, as it appears, denuded. Rather, it is covered with a columnar type of epithelium such as lines the inside of the canal or the endocervix, instead of being covered with the normal squamous, or pavement, type of epithelium which continues from the vaginal wall over that portion of the cervix which projects into the vagina or the "portio." "Erosion" is the term commonly employed for this apparent denudation and will be used here. What is said of erosion can also be taken to apply to ectropion.

An erosion is evidence of chronicity of a le-

sion and is the after-effect of some form of cervical trauma, such as lacerations at childbirth, instrumental dilatation or previous infection. Approximately 50 per cent of cervixes reveal some degree of erosion postpartum. The lesion is the result of an attempt at repair. After traumatic denudation, the columnar epithelium of the endocervix piles up over the area in an attempt to protect the surface until new squamous, or pavement, epithelial cells can be laid down. The columnar cells are the normal lining of the sterile and slightly alkaline endocervix and, following trauma, they are exposed to an infected and acid medium in the vagina. Sexual trauma may disrupt the attempt at covering and the process results in a building up of a papillary, thickened, reddened, rough and oozing surface. This surface is chronically irritated by the vaginal flora and by the acid medium so long as erosion exists.

Many authorities claim that eradication of chronic cervicitis is a prophylactic measure against cancer of the cervix. Crossen wrote, "Carcinoma of the cervix develops usually on a

*From the Section on Obstetrics and Gynecology, The Mayo Clinic, Rochester, Minnesota. Read before the meeting of the Southern Minnesota Medical Association, August 31, 1936, Albert Lea, Minnesota.

basis of chronic cervicitis." Chronic cervicitis is a possible cause of sterility and certainly seems to be a probable focus of infection. It is true that the proportion of cancers of the cervix as related to erosions is small, but, if elimination of the cancers of the cervix can be accomplished by the rather simple process of eliminating erosions, it would seem that more interest should be directed to adequate healing in chronic cervicitis. If women could visualize these lesions as the physician sees them through a speculum, not so many cervical erosions would be neglected.

Many methods have been used in treatment of erosions, but other processes seem only palliative as compared with that of destroying the lesion by actual cautery. The majority of cauterizations can be performed in the office and the patient can remain ambulatory. When anesthesia is necessary, application of 10 per cent cocaine is sufficient. The apparatus for cauterization is well standardized: a nasal cautery tip, a rheostat, and a control operated by foot or finger are furnished. An adequate speculum and light are essential. As a rule, the entire lesion can be cauterized at one treatment. Contraindications are acute pelvic infections as well as the same contraindications as those which are recognized when other minor surgical procedures are contemplated.

Complications may include persistent oozing of blood, which can be checked by application of styptics, by packing sterile gauze against the cervix, or by touching the bleeding point with a dull red cautery and thus coagulating the source of bleeding. Stenosis seldom occurs if the area of the external os is adequately coned out.

In the event there is any evidence of an early neoplasm, it is, of course, mandatory to defer cauterization until a specimen for biopsy has been examined by a competent pathologist. Even though one may have burned into an early epithelioma, however, the chief harm is in the delay in adequate radiation or in radical hysterectomy.

Several large series of treatments by cautery in cases of chronic cervicitis, without the subsequent occurrence of any cervical carcinoma, have been recorded. Of 990 cauterizations of the cervix performed at The Mayo Clinic from 1926 to 1928, replies to questionnaires were received from 64.6 per cent of the patients after a lapse

of from six to nine years. One epithelioma of the cervix was reported, but this patient had had a polyp removed and its base touched with the cautery. The epithelioma was treated elsewhere four years later.

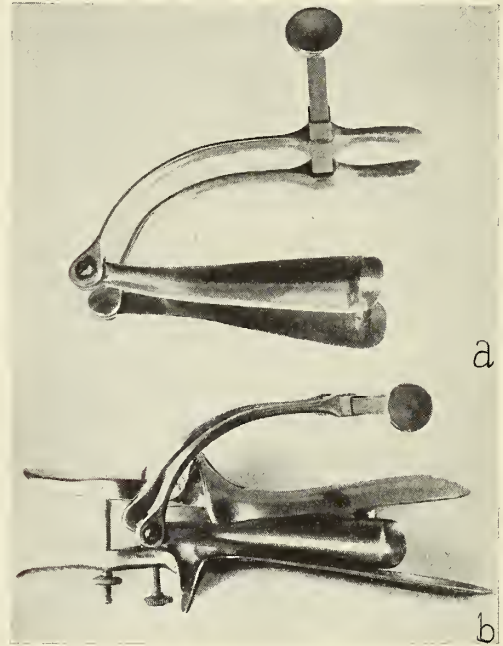


Fig. 1a. Lateral vaginal wall retractor; b, blades of lateral vaginal wall retractor in place between blades of speculum.

Probable evidence of the infectious nature of these cervical lesions is a series of 454 patients who had complained of backache. Seventy-nine per cent replied to questionnaires and 63 per cent of these had been relieved of the backache while an additional 11 per cent reported that their backaches were improved.

Cysts are endocervical glands with columnar cell lining, which have become sealed so as to produce a pocket; they are filled with clear mucus or with infected mucus. Normally the endocervical canal is effectually closed to invasion of bacteria from the vagina. The canal has an anterior and a posterior longitudinal ridge projecting into the lumen from which oblique folds (palmate folds) extend on either side. These folds interlock and the endocervical mucus secreted by the racemose glands inhibits the entrance of microorganisms. Lacerations destroy this mechanism and the glands are stimulated to increased secretion of mucus in an effort to wash out debris; this process results in abnormal leu-

korreha. An analogy may be drawn between (1) the mucus-secreting glands of the lining of the stomach which, when surrounded by a gastric content of an abnormal type of reaction, tend to produce pathologic changes, and (2) those glands of the endocervix which also secrete mucus and may undergo abnormal changes.

Transillumination of the cervix by means of the "cold light" is a help in diagnosis of buried cysts. A suitable retractor for the lateral walls of the vagina, to be used in conjunction with an ordinary speculum, aids in the procedure (Fig. 1a and b).

Vaginitis Caused by *Trichomonas Vaginalis*

This disease, when the patient first calls on a physician, often is of more than ten years' duration and has not yielded to ordinary treatment; there may have been remissions, ranging from months to even years, but subsequently there is a recurrence. Douches and local applications may have helped in one episode and failed to help in subsequent exacerbations.

The histories of symptoms may be variable and the diagnosis uncertain, but the microscopic finding of the protozoan in the fresh secretion reveals the etiologic factor. A smear is so readily made that if the physician will employ his microscope the organisms should be found. Staining or fixing methods are inadvisable for the *Trichomonas* is best seen in the active state. Activity is the identifying characteristic and if this is destroyed by any chemical substance, by any lubricant, or by drying of the smear, it is difficult to observe the organism.

The method of taking the smear is simple. A drop of physiologic saline solution is placed on a slide and the tip of the examining finger is touched to the saline; a cover glass is placed over the preparation. Then, with use of the low power and a greatly reduced light, the observer notes small clumps of epithelial cells and debris, which appear agitated, and it is seen that a small, pear-shaped or round, semitransparent cell is causing the jerking motion. Use of high power reveals this cell to be of the size of a leukocyte and at its blunt end is observed the waving back and forth of debris. Under favorable circumstances the four flagella which produce this activity can be seen. An excellent article on the morphology and cultural characteristics of *Trichomonas vaginalis* recently has been contributed

by Powell. The first examination of the patient is the favorable opportunity for identifying the *Trichomonas*.

Obviously, the existence of gonorrhea must be excluded by examination of Skene's glands, the uterine cervix, and a stained smear, if there is a suspicion that such a condition exists. Gonorrhea and *Trichomonas* are not frequent cohabitants of the same host, although a previous history of gonorrhea is said to have been obtained in a third of the cases of *Trichomonas vaginitis*.

No one seems at all certain as to the source of infestation with *Trichomonas*. It is not considered to be one of the so-called shame diseases. Undoubted virgins may be severely infested. Some investigators feel that the three chief types of *Trichomonas* that infest human beings—namely, the vaginal, the intestinal, and the buccal—may be interchangeable under favorable circumstances. The three types have been grown in one medium and are said to become identical. Some observers deny this and claim that the three types are always distinguishable from each other. This latter view is held by many protozoologists of excellent reputation. Others have suggested that the saliva of pet animals contains a *Trichomonas* which might be transmitted. Public bathing beaches are suggested as a source, since infestation seems to follow bathing in certain lakes. The disease is said to be observed rarely among women who bathe in the salt water of the ocean. More and more cases in which *Trichomonas vaginalis* has been recovered from prostatic secretion are being recorded and this is a probable source of some of the re-infestations.

Historically, *Trichomonas* was reported a century ago, in 1836, by Donn  ,⁵ but in the past half decade great advances have been made in diagnosis and in methods of eradication.

The pathogenicity of *Trichomonas* has not been definitely proved, but as the organism is removed the symptoms of vaginitis improve. Some maintain that the associated bacteria are responsible for the inflammation. A normal vagina harbors a bacillary type of organism, while in vaginitis associated with *Trichomonas* the coccoid types predominate.

Treatments suggested are very numerous. Hitherto, attention has for the most part been directed to some antiseptic and dehydrating agent

to destroy the organism and such methods were successful in the usual case. Of these agents mild silver protein, mercurochrome, merthiolate, pyroligneous acid, picric acid, kaolin, starch, zinc sulphate, sulphur, and Lassar's paste might be mentioned; to this list should be added douches of lactic acid, white wine vinegar, solutions of formaldehyde and strong solution of sodium chloride. Re-infestations occur, however, and are frequently encountered following the menstrual period, perhaps because blood serum offers a favorable culture medium for the growth of the organism or perhaps because of the reduced acidity during the menstrual flow.

More recently arsenic in the form of stovarsol, with a little salicylic acid and kaolin, used as a powder, has become widely used and successful. This treatment should be repeated twice a week or oftener and should be preceded by a cleansing douche of tincture of green soap ($\frac{1}{2}$ ounce to 2 quarts, 15 c.c. to 2 liters, of water). The treatments should be continued through one or more menstruations and cure is not considered to have been effected until two or more periods of menstruation, without recurrence, have elapsed.

Such associated disease as cervical erosion should be cleared up after the acute symptoms have subsided. The general state of health of the patient should be improved; nervousness should be allayed by sedatives, if necessary; reassurance and rest and proper nutrition should be maintained and, judging from recent developments, administration of vitamin A, as obtained in cod liver oil, may prove a valuable contributing factor to ultimate cure.

Vaginitis from Monilia or Fungus

The symptoms of vaginal infestation with molds may be similar to those of infestation with *Trichomonas vaginalis*. In the former, the leukorrhea may have more the appearance of curds and whey and may be less foamy. There usually is a characteristic, musty odor and the subepithelial, inflamed structure may have a tendency to bleed on slight trauma. Surrounding pruritus may be an outstanding complaint. Vaginitis from *Monilia* is persistent in some cases of pregnancy and in diabetes. It may accompany infestation with *Trichomonas* and is frequently associated with atrophic, or senile, vaginitis.

Although the infestation probably is the result of altered local metabolism, possibly attributable

to hormonal imbalance, the yeast organisms are readily destroyed by specific medicaments. The foremost remedy is a watery solution of gentian violet. This may be combined as follows: gentian violet 1 per cent, neutral acriflavine 0.5 per cent, in glycerine. Mild silver protein in 20 per cent solution can be tried. These remedies can be applied each two or four days and a douche of bicarbonate of soda may precede each treatment.

The rods and buds of *Monilia* can be observed in the microscopic smear but are more readily isolated by cultural methods. When *Trichomonas vaginitis* fails to respond to appropriate remedies it may be advisable to paint the vagina with gentian violet in 1 per cent solution on the supposition that *Monilia* may be a causative factor.

Senile or Atrophic Vaginitis

The terms, "senile vaginitis" and "atrophic vaginitis," indicate that this condition is one of degeneration. Its presence is generally encountered after the menopause or after ovarian influence has been withdrawn. It is more truly a manifestation of altered metabolism in the vaginal mucosa, but is also complicated by inflammation of the subepithelial layers.

Histologically, the three chief layers of the mucous membrane are thinner than is normal and increased cornification and desquamation are evident in the surface epithelium. The blood supply is reduced and the mucous membrane takes on a parchment-like, pale, thin appearance. Various pathogenic organisms may irritate the tissue and the vaginal acidity is found to approach neutrality or even alkalinity.

The examiner often sees little, punctate, red or yellowish areas which taken together resemble a rash or subepithelial hemorrhages, yet they are probably areas of further advance of the atrophic process. These areas on opposing walls of the vagina may adhere to one another and produce synechial bands or adhesions. It is not uncommon for these bands to bleed after coitus or after taking of a douche and often they arouse fear of cancer. Sometimes the vagina is practically obliterated by these adhesions.

Trichomonas occasionally, and *Monilia* frequently, are found as infesting organisms in the senile type of vaginitis and the patient may be

treated for such infection, but the atrophy and metabolic changes demand other treatment.

In some very interesting papers investigations into senile vaginitis have been reported. Adair and Hesselstine, Oberst and Plass, Jacoby and Rabbiner, Simpson and Mason, and Weinstein and his associates have made contributions to this subject. They pointed a way to the effectual relief of the condition. All seem to agree that the abnormality of the reaction of the vaginal secretions is an indicator of the pathogenicity of the process.

Adair¹ and Plass⁴ both were able to group vaginal bacteria according to the degree of acidity, or according to the pH or hydrogen ion concentration, of the vagina. The higher grades of acidity were associated with the normal vaginal bacteria or lactobacillus of Döderlein, while in association with the lower grades of acidity, and with alkalinity, the coccoid types, together with pathogenic organisms, were found.

These authors have been able to influence and change the pH by various means. All seem agreed that the presence of the follicular hormone, estrin, tends to produce a normal protective epithelial covering of the vagina, usually with appearance of vaginal lactobacilli and improvement of the vaginitis. Jacoby and Rabbiner produced the effect by hormones alone. Simpson and Mason produced a beneficial effect by administering vitamin A in the form of cod liver oil or haliver oil and by giving a diet rich in milk, eggs, fresh meat, fruits and vegetables. The method in which vitamin A is used seems applicable only when there has been some inadequacy or idiosyncrasy in the diet of certain elderly women. Adair and Hesselstine supplied a food or pabulum to the undernourished vaginal epithelial cells. They placed a powder of lactose, 95 per cent, and citric acid 5 per cent, in the vagina and found that the epithelial cells assimilated the carbohydrate in the form of granules of glycogen. Swelling and thickening of the protective epithelial cells, with symptomatic improvement, occurred. The investigators expressed the belief that this process is influenced by estrogenic hormone in the body. Some have observed a similar improvement in infestation with *Trichomonas* and in gonorrhea, from the administration of this hormone. This procedure has been widely employed in the treatment of

gonorrhea of little girls, whose vaginal epithelium assumes a mature appearance when the hormone is given in sufficient quantity, returning to an immature appearance after administration of the hormone has been discontinued.

Treatment of the More Resistant Forms of Vaginitis

In treatment of the various types of vaginitis, in their more resistant phases, it has been the practice of some physicians to advise the use of cod liver oil, to relieve any evidence of mild anemia, to allay nervousness by proper methods and to correct faulty intestinal habits. In many resistant cases of *Trichomonas* vaginitis marked improvement follows the institution of such measures. Perhaps the lowered vitality of the host is the reason why some, and not all, women are subject to these distressing conditions. Certain manufacturers of drugs have utilized nutrient elements in their remedies. Some form of carbohydrate, often lactose, is combined with stovarsol and a dehydrating medium.

The acute irritation should be soothed with aqueous solution of merthiolate, and perhaps a tampon on which a liberal coating of Lassar's paste has been applied may be placed in the vagina. The tampon is to be removed the next day and a douche of tincture of green soap ($\frac{1}{2}$ ounce to 2 quarts of water) used. On the second or third day, one of the stovarsol powders, or a similar preparation, is introduced by means of a blower. This procedure is to be repeated each second or third day and continued through a period of menstruation. The soap douche preceding the powder is cleansing and soothing. *Trichomonas* disappears after a few treatments. If they recur after menstruation the patient may insert one of the prepared tablets daily for two or three days and then use a douche of soap solution. If recurrences persist, the husband's prostate gland should be searched for *Trichomonas* and the patient should establish a routine of cod liver oil, tonics, sedatives, and so forth.

For Monilia, the gentian violet mixture is usually sufficient. When too persistent, general measures should be instituted and perhaps estrogenic hormone administered. In cases of infestation with either *Trichomonas* or Monilia, when the acute symptoms have subsided sufficiently to permit, the cervix should be cauterized if there

s any indication for so doing. This latter procedure hastens healing in vaginitis and is worthwhile prophylaxis against cancer.

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X-RAY DIAGNOSIS OF PLACENTA PREVIA IN GENERAL PRACTICE*

ROBERT E. PRIEST, M.D.

Worthington, Minnesota

PROCEDURES used in diagnosis of many of the more serious and obscure human ailments are not available to the general practitioner outside large centers. Some require apparatus too expensive to be practical. Many demand special training which a general practice does not justify. It is the purpose of this paper to re-emphasize the x-ray method of Ude and Urner¹⁹ for diagnosis of placenta previa, and to call attention to its simplicity, accuracy, and the ease with which general practitioners may use it.

Prior to the introduction of this method several procedures had been suggested for roentgenologic diagnosis of placental position. A brief review of these methods is given here. The first one consists of those methods using no contrast media. Baumann³ reported one case in which he claimed to have detected a central placenta previa in an ordinary radiograph. Kerr¹² could see no evidence of a placenta in the radiograph. Calcified patches, when present in the placenta, were used to show its location by Staveley.¹⁶ These are not always present, and interpretation of such x-ray findings is uncertain. Friedman and MacDonald⁷ and Ude, Urner and Weum¹⁸ have reported seeing the placental shadow in the lower uterine segment in ordinary films. Both groups show that it can be seen much more easily and clearly with an intravesical contrast medium.

Powell and Snow¹⁵ reported sixty cases in which they had studied ordinary roentgenograms of pregnant women. They usually had antero-posterior and lateral films and claimed that the

placenta could be demonstrated in a large percentage of cases. They said that "the placenta was not seen heretofore because we did not look for it." They reported no cases of placenta previa. This technique requires more roentgenologic experience than the average general practitioner possesses, and its application to placenta previa would seem to be difficult.

The methods utilizing contrast media may be divided into two groups, *i.e.*, those employing an intra-uterine medium, and those in which the medium is extra-uterine. In the intra-uterine group one finds Hewitt's method¹⁰ of injecting one cubic centimeter of iodized oil into the lower uterine segment through the vagina at several different sites. If the needle deposits the oil in the low-lying placenta a globule is formed, which shows on x-ray. If the needle does not deposit the oil in the placenta, the oil runs down the inside of the uterus forming a streak instead of a globule. Possibility of infection, together with difficulties of technique and interpretation render such a process unsuited for the general practitioner's use.

Another procedure using an intra-uterine medium is that reported by Ehrhardt,⁶ Gragert,⁸ Heuser,⁹ Vajano,²¹ and Katsuya.¹¹ They showed that thorium injected intravenously would be deposited in the reticulo-endothelial system of the placenta, as well as the liver, and would visualize the placental site on roentgenographs. Rabbits injected experimentally showed signs of an overdosage before enough dye could be given to visualize the placenta. Lewisohn¹³ showed nu-

*From the Worthington Clinic.

clear damage in cells when enough was given to make clear roentgen shadows. Stewart, Einhorn and Illick¹⁷ report unfavorably on its use. Obviously, such a procedure is unsuited to general practice.

In 1930 Menees, Miller and Holly¹⁴ and in 1932 Kerr and MacKay¹² reported injection of x-ray opaque substances into the amniotic sac, which, when diffusion had taken place, converted the amniotic fluid into a contrast medium. The procedure was called amniography. The placenta showed as a filling defect when seen on edge. In forty-one cases reported by these investigators only two cases of placenta previa were encountered in which diagnostic errors were made. In one of these cases¹⁴ the placenta was perforated when the injection was made. Because one of these cases was a placenta previa succenturiata,¹² and the other occurred in a six month pregnancy,¹⁴ it is unfair to base conclusions on them as to the diagnostic efficacy of amniography in placenta previa. Adair,¹ in 1933, said, "I want again to emphasize that amniography is in its experimental stage, and I think we might well doubt its great value as a procedure."

Burke⁴ in 1935 reported twenty-three cases in which he injected various contrast media into the amniotic sac. In his group were five cases of placenta previa in which the placental site was clearly demonstrated. Burke suggested that the placental shadow could be seen more easily in the lower uterine segment than in the upper because the tissues are thinner, intestinal gas does not interfere, and the shape of the lower uterine segment is more constant than that of the upper. Hence he claimed that the diagnosis of placenta previa by this method was relatively easy and accurate. Reproductions of some of his plates are difficult to interpret, and it would seem that his results could hardly be duplicated by men in general practice.

Amniography is not very apt to enjoy wide use among general practitioners because of the danger of inducing labor by its use,^{12,4} the possibility of causing fetal death,¹² the danger of hemorrhage by passing the needle through the placental site or umbilical cord^{14,5} and the possibility of perforation of maternal viscera.²

The method of Ude and Urner,¹⁹ which will be discussed later, employs an extra-uterine contrast medium. This gives it important advantages

over those processes using intra-uterine media. Because the genital tract is not invaded there is no danger of infection. This is of special significance if cesarean section or operative vaginal delivery is later undertaken. The placenta is not disturbed, and hence the patient with placenta previa is not endangered by the hemorrhage which may follow digital examination through rectum or vagina. The dangers cited in the discussion of amniography are entirely eliminated.

In February 1934, Ude, Urner and Weum¹⁸ reported the first case of placenta previa diagnosed by using intravesical contrast medium. This case was proved by cesarean section. Friedman and MacDonald,⁷ in January 1935, published reports of two cases of placenta previa diagnosed by the method of Ude and Urner. Clinical findings at delivery and operation substantiated the x-ray diagnoses.

In 1935 Ude and Urner¹⁹ reported thirty-five cases of abnormal uterine bleeding in the last trimester of pregnancy, which they had studied with their cystogram technique. Fourteen of their cases showed roentgenologic signs of placenta previa, and all were corroborated by clinical or operative findings.

The technique of Ude and Urner consists of injecting not more than forty cubic centimeters of twelve and one-half per cent sodium iodide into the empty urinary bladder. A roentgenogram is then made with the patient on her back, and the central ray directed over the lower abdomen. Normally the space between the fetal skull and the contrast medium in the bladder is about one centimeter. It is made up of the combined thicknesses of the fetal scalp, lower uterine segment, peritoneum and bladder wall. If the placenta lies in the lower uterine segment the distance between the fetal skull and the contrast medium is greater than normal. The widening may be uniform as in central placenta previa, or unilateral as in marginal placenta previa or low implantation. In cases of premature separation of the normally situated placenta the distance between fetal skull and contrast medium is unaltered, unless blood clots intervene. Aid in differential diagnosis may be furnished by cystograms (*see Case 5*).

The procedure of Ude and Urner requires only equipment easily accessible to the general

practitioner. Its accuracy, simplicity and safety commend it highly. It has been used successfully by men in general practice as is shown by the appended case reports and roentgenograms.

Case 2.—By courtesy of B. O. Mork, Jr., M.D., Worthington, Minnesota.

Mrs. D. R. S., aged twenty-two, para none, gravida one; last menstrual period, December 28, 1934. Menstrual cycle very irregular; some intermenstrual periods



Fig. 1. Case 1.

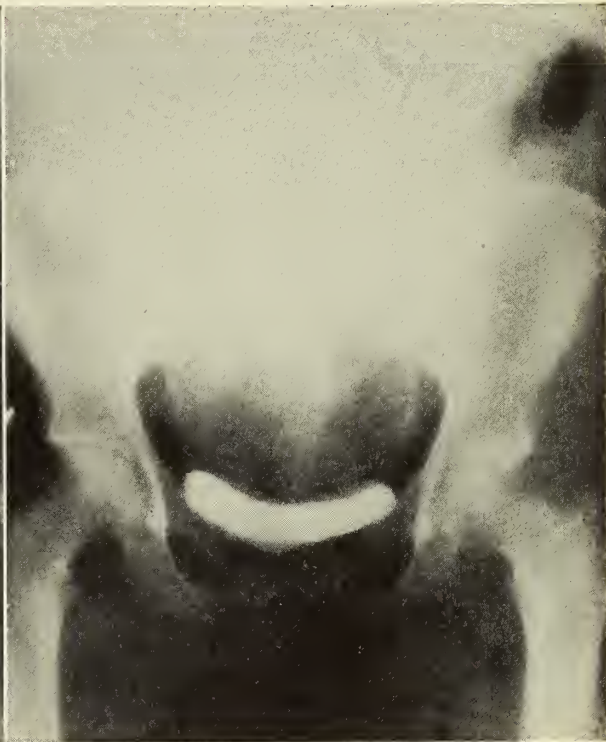


Fig. 2. Case 2.

Case Reports

Case 1.—By courtesy of E. W. Arnold, M.D., Adrian, Minnesota.

Mrs. N. A. F., aged twenty-six, para one, gravida two; last menstrual period, October 29, 1935; expected date of confinement, August 5, 1936. Pregnancy was normal until the afternoon of July 20, 1936. On that day the patient felt slight pain in the abdomen as she was hoeing in her garden. She took no notice of the pain. At 10 o'clock that evening she passed bright red blood per vagina while at stool. There was no pain. The patient called her physician and was ordered to bed. All bleeding ceased in a few hours.

An x-ray film, which was made July 23, 1936, using the technic of Ude and Urner, gave findings typical of placenta previa centralis (Fig. 1). Cesarean section, July 24, permitted delivery of a live, normal baby, and the placenta was found to be in the lower uterine segment just as the x-ray had indicated. Recovery from operation uneventful. In commenting on Figure 1, Dr. Ude²⁰ pointed out that the presence of gas in the lower bowel is sometimes a confusing factor and that it might have been helpful to have repeated the film after a cleansing enema.

as long as six months. In March, 1934, was told elsewhere that she had a bifid uterus, and a vaginal septum was removed.

The patient was first seen May 22, 1935, when the fundus was two finger breadths below the umbilicus. The uterus was enlarged to the right and no left horn was palpable. The cervix was small and to the right of the midline. No left cervix was seen.

The pregnancy proceeded normally until August 21, 1935, when there was painless vaginal bleeding. The patient was put in the hospital and the bleeding stopped. On September 6, a roentgenogram was made using the technic of Ude and Urner (Fig. 2). The space between head and intravesical contrast medium seemed to be slightly thicker on the right than the left and a diagnosis of possible marginal placenta previa was made.

Several episodes of painless bleeding occurred before delivery, October 15, 1935. After hard labor had proceeded for ten hours the cervix still consisted of a ring of dense scar tissue, presumably due to removal of the vaginal septum. Therefore, it was dilated manually. The placenta was found in the lower uterine segment, its edge nearly projecting over the os. Thus the tenta-

tive x-ray diagnosis was confirmed. Even if the x-ray diagnosis had not been confirmed, the placentogram would have been of value because it ruled out placenta previa of any marked degree, and thus greatly aided the attending physician in handling the case.



Fig. 3. Case 3.

After dilatation of the cervix was complete, the fetal head came down to the pelvic floor quickly, outlet forceps were applied, and a live, normal baby was delivered. The mother's convalescence was uneventful.

Case 3.—Author's case.

Mrs. E. A., aged thirty-five, para five, gravida six, was first seen at 3:00 A. M., March 16, 1935, at which time she was between eight and nine months pregnant. She did not know the exact calculated date of confinement, nor the date of the last menstrual period. She awakened lying in a pool of blood, and was bleeding quite profusely when first examined. She had no pain. She had bled three or four times during the preceding three weeks, but had called no physician. The uterus was not tense, and the fetal heart was 136 and of normal rhythm. No vaginal or rectal examination was made and patient was transported to the hospital quickly. There a roentgenogram was made using the technic of Ude and Urner, which gave findings typical of placenta previa centralis (Fig. 3). Because of severe hemorrhage, which started again, it was thought that preparation for cesarean section would be too time consuming, and a Voorhees bag was inserted through the placenta which covered the internal os. When the bag came out an attempt was made to apply forceps

but the fetal head was too high. A version and breech extraction were done and a live, normal baby was delivered. The placenta and membranes were delivered without difficulty, and the mother had an uneventful convalescence.

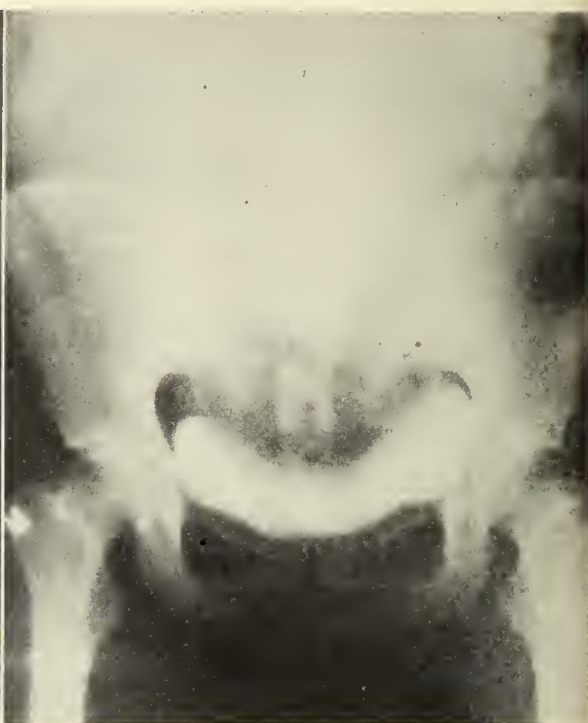


Fig. 4. Case 5.

*Case 4.—*By courtesy of H. B. Paulsen, M.D., Harris, Iowa.

Mrs. L. B., aged thirty-five, para three, gravida four; last menstrual period, March 15, 1935. The patient first consulted her physician November 1, 1935, because of painless vaginal bleeding. She was put to bed and given sedatives and the bleeding ceased. She got up after three days, and the bleeding recurred. She never bled a large amount, but passed several blood clots. An x-ray film was made November 5, 1935, using the technic of Ude and Urner. The distance between the fetal head and the intravesical contrast medium could not be judged because the fetus presented by the breech. The fetal sacrum was not visible in the film. A diagnosis of premature separation of the placenta was made when examination revealed no boggy area of the cervix. This was confirmed by findings at delivery. The patient passed old blood clots immediately after the child was born, and on the very large placenta was a crescentic area of old clot which was thought to be the site of the premature separation. This case is included to show the difficulty of using the cystogram technic with breech presentations.

*Case 5.—*By courtesy of H. B. Paulsen, M.D., Harris, Iowa.

Mrs. L. Z., aged thirty-two; para two, gravida three. The patient was first seen in January, 1936. Her pregnancy was normal except for three or four occasions from the fifth to the eighth months when intermittent vaginal bleeding occurred. The bleeding was always accompanied by uterine cramps. The flow was small in amount and rest in bed for a few days checked it each time. The last hemorrhage occurred at eight and one-half months. A roentgenogram was made using the technic of Ude and Urner, on May 14, 1936. This showed that the fetal head was not separated from the urinary bladder by any abnormal distance (Fig. 4). Possibility of placenta previa was thus ruled out and a diagnosis of premature separation of the placenta was made. At delivery labor proceeded normally. There was no unusual hemorrhage, and no blood clots were passed. The placenta showed no abnormality. This case was not definitely proved to be premature separation of the placenta. Nevertheless, the cystogram was of great value because it ruled out placenta previa, and enabled the physician to handle the case with more assurance and peace of mind than would have been possible if he had feared the presence of placenta previa.

Summary

Attention is called again to the cystogram technic of Ude and Urner for the diagnosis of placenta previa, with particular reference to its simplicity, accuracy, safety, and the ease with which it may be used by the general practitioner.

A fairly complete survey of literature on the subject is attempted together with an evaluation of the suitability of other roentgenologic technics for use in general practice.

Cases of placenta previa and premature separation of the placenta treated by general prac-

tioners using the technic of Ude and Urner are reported.

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MANDELIC ACID TREATMENT OF URINARY TRACT INFECTION*

LEO R. PRINS, M.D.
Saint Paul, Minnesota

THE search for a truly effective orally administered urinary tract antiseptic has gone on for years. During this period numerous preparations have been introduced with extravagant therapeutic claims which extensive clinical use has not substantiated.

Among these preparations have been salol, hexylmethylenetetramine, methylene blue, hexylresorcinol, pyridium, acriflavine and drugs for

alternating the reaction of the urine. Competent opinion based on long experience has found none of these to be a truly effective urinary tract antiseptic. What little antiseptic effect they may possess is so slight as to leave in serious doubt the degree in which they may have affected the course of any infection. From very short experience recorded in a limited number of publications during the past year there is encouragement to believe that a similar discouraging appraisal does not await the most recent addition

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to the list of orally administered urinary tract antiseptics—mandelic acid.

The ketogenic diet proposed by Clark¹ and Helmholz⁴ as a means of producing urinary tract antiseptics was the first truly effective method presented. The first reports of the remarkable bactericidal power of the urine produced by this diet have been fully supported by laboratory experiment and clinical experience. For the past several years the diet has been generally recognized as by all means the most effective method of urinary tract antiseptics available. Were it not for the hardships imposed by it and the numerous difficulties attending its employment it might well be considered a successful conclusion to the search which has gone on for so many years.

The use of mandelic acid as a urinary tract antiseptic is a direct outgrowth of Clark and Helmholz ketogenic diet. Originally it was believed that the antiseptic effect of the diet was due directly to the markedly increased acidity of the urine produced by it. In 1933 Fuller³ determined that contrary to this the B oxybutyric acid excreted in the urine during acidosis was the actual bactericidal agent but was effective only in a medium of a pH less than 5.5, a value of urine acidity usually produced by the diet itself. It seemed, therefore, that oral administration of B oxybutyric acid plus acidulation of the urine to pH 5.5 by administration of ammonium chloride would be a simple short cut to the accomplishment of the ketogenic diet. Unfortunately orally administered B oxybutyric acid was⁵ found to be completely oxidized in the body and not even traces of it were excreted unchanged in the urine.

Rosenheim determined the bactericidal properties of several acids closely related to B oxybutyric acid. Among these he found that mandelic acid not only had bactericidal properties but also that with oral administration it was excreted unchanged in the urine. The substance was found to be non-toxic and capable of administration in such quantity as to be excreted in the urine in sufficient concentration to exert a remarkable bactericidal effect. In the British *Lancet* May 4, 1935, Rosenheim⁸ published a brief but most impressive report of clinical experience with the drug. In addition to this a few reports^{2, 6, 7} of limited experience with

the method have appeared in American and British periodicals.

For the past few months we have been using mandelic acid in the treatment of urinary tract infections. This experience is reported now, not with a view to any careful appraisal of the method but only for the purpose of further bringing it to attention and stimulating its more general use. Conditions in which it may be employed with promise of excellent effect have become evident from our observations. Other conditions which limit its effectiveness almost to total failure have also seemed apparent. Conclusions in respect of the selection of cases which these observations indicate are not submitted as final but may be of use to the general practitioner in regulating his use of the drug.

The cases on which this report is based have been subject to more or less complete urologic investigation before administration of the drug. The original condition, effect of the drug and ultimate result have been carefully followed by detailed urine examinations in the pathological laboratory of the Miller Hospital under the direction of Dr. Kano Ikeda and we are indebted to Dr. Ikeda for his coöperation and contribution to this report.

In addition to the usual procedures of complete urologic investigation the following determinations were made on an aseptically collected specimen of urine.

1. Hydrogen ion concentration.
2. Specific gravity.
3. Number of pus cells per sq.mm. in a film of uncentrifuged urine a tenth of a mm. thick.
4. The same examination of centrifuged urine.
5. Microscopic examination of urine sediment in smear stained by Gram's method.
6. Culture.

Administration of the drug was started at once. Either mandelic acid according to the prescription suggested by Rosenheim or a 10 per cent solution of ammonium mandelate supplied to us by the Abbott Laboratories for trial use was given.

Rosenheim's prescription is:

Mandelic acid.....	48	grams
Sodium bicarbonate.....	25.6	grams
Lemon syrup	60	c.c.
Water sufficient to make.....	480	c.c.

with directions to take 1 oz. of the preparation

our times a day after meals and at bedtime. Along with this 4 to 8 grams of ammonium chloride in the form of enteric coated pills were administered daily to acidulate the urine to pH less than 5.5 as required for the bactericidal effect of the excreted mandelic acid. The ammonium mandelate was prepared to avoid the sodium bicarbonate contained in Rosenheim's prescription and with a view to requiring less ammonium chloride to obtain the desired pH of the urine. This preparation was administered in the same dosage as the Rosenheim prescription. In our experience the Rosenheim prescription borne with no untoward effect whatever except for occasional slight nausea. The ammonium mandelate, though it permitted smaller doses of ammonium chloride for acidulation, was not so well borne, was found more distasteful and on occasions produced distressing nausea and at times vomiting.* With the administration of both preparations and the accompanying ammonium chloride, manifestations of acidosis at times appeared in the form of giddiness, somnolence and air-hunger. These were regularly accompanied by very low pH values in the urine and on their appearance the dose of ammonium chloride was diminished.

During administration of the drug, aseptically collected specimens of urine were examined as above on the second, fourth, eighth, fourteenth and twenty-first days.

Detailed report of all cases, tabulation of results and statistical analysis of our experience would serve no useful purpose beyond the comments to be made. The result obtained by administration of the drug is always conditioned by the particular pathologic process involved and determined by the anatomic change present, including presence or absence of obstruction, residual urine, stone, abscess formation, the parts of the tract infected and other details making analysis by tabulation complicated or worthless. It will be of more value to briefly report a few cases typical of the experience from which our conclusions are drawn.

Case 1.—A woman, aged sixty-five, complained of bilateral renal area pain, bladder irritation, chills and

fever of 102.4 degrees. Excretion urograms showed slight changes compatible with a diagnosis of bilateral pyelo-nephritis. Urinary findings were: pH 6.1; 1,145 pus cells per sq.mm. uncentrifuged; Gram-negative bacilli on smear and culture. After administration of mandelic acid for forty-eight hours the flank pain and bladder irritation were less and the temperature was reduced to 100.8 degrees. Examination of the urine now showed: pH 4.9; 1 pus cell per sq.mm. uncentrifuged; no bacteria on smear and only a few colonies of Gram-negative bacilli on culture. On the fourth day all symptoms had disappeared and the temperature was normal. Examination of the urine now showed: pH 5; 1 pus cell per sq.mm. uncentrifuged; no organisms on smear but a few colonies of Gram-negative bacilli on culture. At this juncture the patient left the city on an extended trip. She has remained well but will not permit collection of urine for examination.

Case 2.—A woman, aged thirty, had had left pyelitis six months before the present illness. There was pain referable to the left kidney and immediately before admission a small calculus had been passed. She had chills, temperature of 103.6 degrees and severe pain referable to the left kidney. Diagnosis of acute pyelo-nephritis, left, with possible upper urinary tract obstruction, was made. Findings of the urine examination were: pH 6; 16 pus cells per sq.mm. uncentrifuged; Gram-negative bacilli on smear and culture. Forty-eight hours after beginning mandelic acid administration the temperature was 101 degrees and the pain was greatly diminished. Findings of the urine examination now were: pH 4.2; 6 pus cells per sq.mm. uncentrifuged; no organisms on smear or culture. At the end of ninety-six hours her temperature was normal and the pain had completely disappeared. Findings of the urine examination at this time were: pH 4.2; 1 pus cell per sq.mm. centrifuged; no organisms on smear or culture.

Although the type of urinary tract infection of which these cases are examples may be expected to respond to any form of treatment or resolve spontaneously, there can be no doubt mandelic acid is remarkably effective in terminating the process with complete relief of symptoms and sterilization of the urine. With the ketogenic diet well tolerated there is a delay of three or four days before ketosis is established, whereas here we have almost immediate favorable response.

We have used mandelic acid in cases of calculus pyelo-nephritis in which the indications for surgical removal of the stone appeared insufficient or the patient refused operation. Mandelic acid may be effective in diminishing the pyuria and number of organisms in the urine or even

*Since presenting this paper syrup amdelate (Abbott), a 40 per cent solution of ammonium mandelate, has been introduced. Its use in dosage of two drams four times daily has been uniformly satisfactory in producing a sufficiently low pH of urine without additional ammonium chloride. It is as effective a urinary tract antiseptic as the original Rosenheim mixture and has been very well tolerated by all patients.

temporarily eradicating the infection. However, the good result has not persisted and recurrence of pyuria and bacteriuria has been the rule. The following case is an example of this.

Case 3.—A woman aged fifty-two, complained of occasional right flank discomfort and frequent urgent urination. The left kidney had been removed because of pyo-nephrosis. The findings of the urine examination were: pH 7; 47 pus cells per sq.mm. uncentrifuged; Gram-negative bacilli in smear and culture. There was a small stone in the tip of the inferior calyx of the solitary right kidney and the pyelo-ureterogram showed compensatory hypertrophy, moderate dilatation of the pelvis and inflammatory dilatation of the calyces and ureter typical of chronic pyelo-nephritis. Mandelic acid administration continued for forty-eight hours gave no change in the urinary symptoms. The findings of the urine examination now were: pH 4.4; 0 pus cells per sq.mm.; Gram-negative bacilli on smear but no organisms on culture. On the fifth day there were no organisms on smear or culture. On the seventh day the drug was discontinued and at this time the urinary symptoms were completely relieved. Fourteen days after the drug had been discontinued the findings of the urine examination were: pH 5.4; 41 pus cells per sq.mm. uncentrifuged; Gram-negative bacilli on smear and culture.

In another case almost identical with this, even temporary improvement as evidenced by the findings of the urine examinations was slight.

Our impression is that in calculus pyelo-nephritis mandelic acid gives no promise of permanently eradicating the infection and that surgical indications are unaffected.

The commonest cause of bladder irritation in women is chronic infiltrative urethritis. Most of the cases of so-called cystitis are actually examples of this condition. The inflammatory change in the urethra may extend to the vesical neck and involve the neighboring submucosa and mucosa of the bladder, actually giving rise to a diffuse cystitis secondary to the urethritis. This is particularly likely to occur if the urethral and vesical neck changes cause the presence of residual urine. Accordingly most cases of so-called "cystitis" actually contain two pathologic processes: chronic infection and cicatrization of the urethra plus inflammation of vesical mucosa. Both lesions require treatment. Bladder lavages and orally administered urinary tract antiseptics may diminish the pyuria and number of organisms in the urine and be accompanied by some degree of symptomatic relief but this usually is

not complete and troublesome frequency and dysuria persist because of the urethritis. Conversely adequate treatment of the urethra by sound dilatations, massages and topical applications may not be followed by complete relief because of persisting cystitis. In our experience the combination of local urethral treatments with bladder lavage and the former orally administered urinary tract antiseptics has not been entirely satisfactory. On the other hand mandelic acid has proved most efficacious in eradicating the cystitis and, when used in conjunction with appropriate urethral treatment as indicated, rarely fails.

The present report will not be prolonged by report of any of these numerous cases but it may be said that in the so-called cystitis of women the combination of sound dilatations of the urethra and administration of mandelic acid has regularly given excellent results.

So far as we are aware no report has ever appeared concerning the effect of mandelic acid in acute gonorrheal urethritis. In our use of the drug we took occasion to employ it in such cases and were not surprised to find that it appeared to have no favorable effect whatever.

Case 4.—A young man, twenty-two years old, had a urethral discharge which appeared a day or two following venereal exposure. Numerous gonococci were demonstrated in the discharge. The first glass of urine was cloudy, second glass clear, and this latter finding continued throughout the course of the disease. Full doses of mandelic acid were continued for fourteen days but the number of gonococci in the discharge and the cloudiness of the urine were not affected. Subsequent to this the usual course of treatment eradicated the infection.

The infection and pyuria long persisting following transurethral resection may be of no great importance in the ultimate outcome in cases of bladder neck obstruction treated by this method. However, the frequency of urination and dysuria that accompanies such infection and pyuria are distressing and the persisting cloudiness of the urine is a frequent cause for alarm on the part of the patient. The persisting infection and pyuria appear due to the sloughing and incomplete healing over the surface of resection. Without any treatment whatever the infection and pyuria gradually disappear following complete healing. This may not occur for as long as three

months following operation. We have employed mandelic acid in a considerable number of such cases beginning anywhere from immediately following operation up to several weeks following. Our experience shows that in the presence of incomplete healing the treatment is not capable of eradicating the infection and pyuria. The cloudiness of the urine may diminish and the frequency and dysuria may be improved but disappearance of pyuria is not greatly hastened.*

Conclusion

We have only one conclusion to submit: mandelic acid is by far the most effective orally ad-

*Further experience in using mandelic acid in cases of post-resection pyuria has served to alter our impression regarding its value in these cases. In most instances bladder irritation is greatly diminished, the amount of pus in the urine becomes rapidly less and complete healing of the resected area is hastened materially.

ministered urinary tract antiseptic thus far presented. In properly selected cases it is truly effective and represents a successful conclusion to the search for such a drug.

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CLINICAL ASPECTS OF MORE COMMON FRACTURES*

HARRY B. MACEY, M.D.
Rochester, Minnesota

IN CONSIDERING fractures one cannot too often review such common ones as Colles' fracture and those about the ankle. These fractures, which frequently are treated as simple or trivial injuries, are those most often seen and are the ones that physicians should be most proficient in treating.

Colles' Fracture

Colles' fracture, which probably is the most common, was considered as a dislocation of the wrist, until Abraham Colles, in 1814, gave a classic description of the pathologic changes associated with this fracture. It occurs at the lower end of the radius, from $\frac{1}{2}$ to 1 inch (1.27 to 2.5 cm.) above the wrist joint; it may or may not be associated with a fracture of the styloid process of the ulna. The resulting deformity is characteristic; there is a dorsal displacement of the distal fragment and the wrist assumes the shape of a dinner fork. A large dorsal hematoma appears soon after the fracture and later there is a generalized ecchymosis about the dorsum of the hand and forearm.

The fracture may be simply transverse or it may be comminuted. One should be particularly guarded in making a prognosis in a comminuted fracture, especially if the patient is an elderly individual, as there not infrequently is an absorption of the dorsum of the shaft proximal to the line of fracture, which results in a partial or complete recurrence of the deformity. Comminution of the distal fragment and extension into the joint frequently cause pain and limited motion, and often may result in a painful arthritic joint, overgrowth of bone, and a permanent disability.

Several methods are employed in the reduction of this fracture. All of these depend on traction and the manipulation of the distal fragment into its anatomic position. Reduction may be carried out under general or local anesthesia. General anesthesia naturally gives better relaxation, but local anesthesia, if successfully induced, produces satisfactory relaxation and sufficient relief of pain to permit manipulation and it is an ideal anesthetic in cases in which patients may be in poor physical condition.

If local anesthesia is employed, a 1 to 2 per cent solution of procaine hydrochloride is to be preferred (10 c.c. of a 1 per cent solution usually suffices). There are two dangers to be consid-

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ered when this agent is used: (1) the individual may be sensitive to procaine and, (2) the solution may be injected directly into an artery or vein. The first of these may be passed by because of the extremely low percentage of sensitive individuals; the second may be avoided by cautiously following a simple technic. The site of injection should be just proximal to the fracture line and on the dorsolateral aspect of the forearm. Small quantities of the solution should be injected carefully into the soft tissues. One should aspirate frequently for evidence of blood until the periosteum or bone is felt with the needle. One should keep the needle close to the bone and should continue to push it forward until it reaches the fracture line or until it penetrates into the hematoma. Ten c.c. of the solution of procaine may be safely injected into the hematoma. After the solution has been injected, aspiration and reinjection of 1 to 2 c.c. of the contents of the hematoma will hasten the induction of anesthesia. At least fifteen minutes should elapse between the injection and the manipulation.

For a successful reduction three requirements must be fulfilled. The first is the restoration of the relation of the styloid processes of the radius and ulna. The styloid process of the radius is $\frac{1}{4}$ to $\frac{1}{2}$ an inch (0.63 to 1.27 cm.) distal to the styloid process of the ulna. The second requirement is the restoration of the articulation of the radius with the scaphoid and semilunar bones. The articular end of the radius is concave or cup-shaped; it normally is tilted slightly anteriorly, that is, toward the palm. For best reduction this concavity should tilt toward the palm in such a manner that it forms an angle of about 10° to 15° with the palm. A straight position is permissible but a posterior tilting denotes incomplete reduction. In comminuted fractures the fragments necessarily must be in close approximation. The third requirement is the restoration of the radial arch anteriorly. This is best accomplished by moulding the plaster of Paris splints with the thenar eminence of either hand while the splints are hardening. It is generally conceded that anterior and posterior plaster of Paris splints which have been molded serve best for fixation. Unpadded splints are used, but this method should be condemned unless vigilant observation is maintained, at least during the period of acute swelling, to obviate any chance of re-

sidual ischemia with its associated deformity. Furthermore, splints should never extend beyond the heads of the metacarpal bones, posteriorly, or below the midpalmar line, anteriorly.

Active use of the fingers should be encouraged immediately following reduction and throughout the period of fixation, in order to prevent the development of stiffness of the joint and osteoporosis of the bones of the hand. Furthermore, active use of the fingers preserves the tone of the muscles of the forearm.

Fixation should be terminated when the fracture has united, which usually requires four to five weeks. Physical therapy should be instituted with termination of immobilization. This may be carried out at home by the use of warm baths, active and passive exercises, and massage.

The treatment of Colles' fractures which are associated with malunion and disability is entirely surgical and consists of some type of osteotomy and correction of the deformity.

Fractures About the Ankle

Fractures of the malleoli about the ankle joint were first brought to our attention by Percival Pott, in 1779. Since this time many classifications have been advanced. The simplest of these is that of Henderson which divides these fractures into three types: single, bimalleolar and trimalleolar. Malleolar fractures are chiefly dependent on two factors; namely, the position of the foot and the force at the time of the injury. Injuries which occur while the foot is in external rotation may produce a high or low fracture of the external malleolus. If the force is continued it may produce a tearing of the internal lateral ligament or a fracture of the internal malleolus, thus producing a bimalleolar fracture. If force is applied against the adducted or inverted foot it may produce a similar sequence of events leading to either a unimalleolar or bimalleolar fracture. Force against the abducted or everted foot may produce a similar picture resulting from a reversed sequence; the internal malleolus is fractured and if the force continues it produces an associated fracture of the external malleolus.

In the majority of cases of fractures of the lower part of the external malleolus without displacement, strapping with adhesive plaster according to the method of Gibney will suffice. The plaster of Paris boot should be reserved for extremely heavy or sensitive individuals. With the

adhesive strapping, moderate weight-bearing is permissible, while those treated with casts usually are incapacitated for four to five weeks.

In high fractures of the external malleolus, casts should be used routinely. However, in some cases in which a high fracture of the malleolus was not treated with immobilization, examination weeks or months later has demonstrated a good position and union or the formation of a callus. This emphasizes the fact that nonunion and disability are rare with this fracture.

In cases of fracture of the internal malleolus, the treatment should be more vigorous than it is in cases of fracture of the external malleolus. One should strive for accurate reduction and immobilization, as this injury not infrequently results in nonunion or a painful arthritis. Fixation should terminate when union can be demonstrated, which rarely occurs in less than four to six weeks. On allowing active use of the limb, the longitudinal arch of the foot should be supported and heavy individuals or those who have osteoporosis, should wear braces which hold the foot in the varus position.

Bimalleolar fractures which occur when the foot is abducted or adducted may produce no displacement or varying amounts of displacement of the fragments. The situation of the fracture of the fibula is of importance as a lateral displacement of the foot may occur in association with a high fracture of the fibula. Lateral displacement should be determined before attempting reduction in every case of bimalleolar fracture, particularly in cases of high fracture of the fibula. This is determined by noting the relation of the tibia to the astragalus. In cases in which there is no displacement, a cast should be applied, with the foot at a right angle to the leg and in the inverted position. Inversion of the foot should be at the subastragalar joint and not at the mid-tarsal joint. Immobilization should be continued until union is firm. Approximately four weeks are required for firm union to occur. The advisability of weight-bearing is determined by the amount of union and by the absence of pain on manipulation. Immobilization may safely be continued several days to weeks longer in cases in which the patients are obese.

In cases in which there is displacement, manipulation first consists of mobilizing the fragments. This is best accomplished by flexing the thigh on the abdomen in order to relax the tendo achil-

lis and then manipulating the ankle in all directions. Next, with a steady downward pull on the foot, the foot is brought upward to a right angle and inverted sharply. A cast is applied while the foot is in this position. Casts which extend to the middle of the thigh, and which are applied while the knee is flexed at approximately a right angle, often afford the greatest comfort and offer the least chance for slipping of the fragments. The after-care is approximately the same as that which has been described previously.

The third, or last group, trimalleolar fractures, consist of fractures of the internal and external malleolus and an associated fracture of the posterior margin of the tibia, which may vary in size from a chip to a fragment composed of more than half of the articular surface. Trimalleolar fractures are produced in a similar manner to the bimalleolar fracture plus an associated force on the posterior margin of the tibia. It is in cases in which there is displacement that the largest number of poor results are obtained. The poor results usually are the result of incomplete or poor reduction. I know of no fracture in which one should strive harder for perfect anatomic restoration than in those fractures in which there is a large posterior fragment. A late complication, which at times occurs despite an excellent reduction, is arthritis which is associated with narrowing of the articular space, sclerosis or increased density of the bones adjacent to the ankle joint, namely, the tibia and astragalus. This usually causes pain when the joint is moved; the pain is proportionate to the changes which occur and probably is the result of direct trauma to the cartilage at the time of injury. Unfortunately, it is impossible to predict the amount of change likely to occur, although it may be suspected in severe fractures of the ankle.

In cases in which there is a large posterior fragment, there not uncommonly is a posterior dislocation of the foot. This is less likely to occur in cases in which the fragments are small. This condition is usually recognized by a characteristic anterior prominence of the distal end of the tibia; the foot is held in the equinus position and the length of the foot apparently is increased.

One should be certain that there is no dislocation of the foot before attempting to reduce trimalleolar fractures. The first procedure consists in restoring the relationship of the posterior fragment by flexing the knee and then carrying

the foot into extreme equinus position in order to secure complete mobilization of the fragment. The foot is next moved dorsally, which allows a downward pull on the posterior capsule, providing it remains intact, and also on the posterior talotibial and posterior lateral malleolar ligaments. After this procedure the foot is carried into extreme inversion at the subastragalar joint in order to approximate the internal malleolus. A cast is best suited for retaining the fragments in the correct position. This preferably should extend above the knee. The after-treatment is essentially the same as that described for bimalleolar fractures.

Comment

Roentgenograms should be used freely in the treatment of fractures. Persistent pain about the ankle and wrist should not be considered to be the result of sprain or trivial injuries until roentgenologic examination has failed to demonstrate the presence of a fracture or dislocation. Roentgenograms are good insurance not only for self protection but for the protection and proper care of the patient. In comminuted

Colles' fractures, particularly those which extend into the wrist joint, the prognosis should be guarded. Early active use of the fingers and hand should be encouraged, and early safe mobilization should be instituted, particularly in the cases in which the patients are elderly individuals.

In the single malleolar type of fractures of the ankle prolonged immobilization is not usually necessary. In the bimalleolar fracture with a high fracture of the external malleolus one should look closely for lateral displacement of the foot, and in the trimalleolar type one should look for posterior displacement. In the after-care, that is, when weight-bearing is allowed, it is good practice to use longitudinal arch supports. In the treatment of bimalleolar and trimalleolar fractures it is always safe to use some form of supportive brace; an outside iron and inside T-strap usually suffice.

In recent Colles' fracture and in malleolar fractures, open reduction is rarely indicated although it is freely resorted to in the treatment of old malunited fractures of these types.

AFFECTIVE REACTION TYPES OF PSYCHOSES*

Presentation of a Case

John Lohmann, M.D.

Fergus Falls, Minnesota

EFFECTIVE reaction-types of psychoses include manic-depressive and involutional melancholia. The term manic-depressive was coined by Kraepelin to denote disorders of the affect or emotion, which are characterized by elation or depression. By this term he attempted to show that they are merely different phases of the same disease and not distinct entities (mania and melancholia) as they had previously been considered.

Involutional melancholia is a psychosis common to men and women during the physiological involution, and is characterized by depression (without psychomotor retardation) anxiety, a feeling of unreality, with hypochondriacal and nihilistic delusions.

I will first discuss the manic-depressive, then

the involutional psychosis, and finally will present a case of manic-depressive psychosis of the depressed type.

In the manic-depressive group, the most important predisposing etiological factor is heredity. Kraepelin states that 60 to 75 per cent of cases show some form of hereditary predisposition. Women are most liable to this psychosis, mother-daughter transmission being quite common. The mental make-up or disposition of a manic-depressive prior to the development of the psychosis is usually one in which the affect or emotion swings like a pendulum from states of elation to states of depression.

The cardinal symptoms of the manic phase of manic-depressive psychosis are: (1) elation and instability of the mood; (2) flight of ideas; and (3) increased psychomotor activity. Other features such as irritability, suspicions, delusions

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and hallucinations complicate the picture. Usually manic outbursts are acute in onset.

The manic state has been divided into four varieties.

1. *Hypo-mania* is that state in which the patient shows *mild* elation, overactivity and flight of ideas. He is intolerant of criticism, arrogant, and extremely restless. He is full of energy and is often spoken of as a "live wire." There is no clouding of consciousness, no disorientation, no delusions or hallucinations.

2. In *acute mania*, a stage of the manic phase, the patient shows more marked elation, overactivity, and flight of ideas. In addition to these findings, there may also be a certain clouding of consciousness, disorientation and mental deterioration. The patient is usually gay, but periods of irritability are frequent. Hallucinations may be present, but are usually transitory.

3. *Delirious mania* is the extreme stage of acute mania. The patient is completely disoriented in all spheres, is very overactive and overtalkative, conversation being entirely incoherent. Increased bodily and mental activity must be promptly reduced by means of powerful hypnotics or hydrotherapy, lest the patient exhaust himself. Hallucinations, delusions and suspicions usually develop.

4. *Chronic mania* is the term given to acute or delirious mania which does not clear up in three to six months' time. Cases of chronic mania have been known to last six to eight years.

The cardinal symptoms of the depressive phase of manic-depressive psychosis are depression, psychomotor retardation and difficulty in thinking. The most important feature of depressive psychosis is the danger of suicide, as it is this type of patient who is most liable to take his own life.

Depressions are frequently subdivided into three grades:

1. *Simple retardation*. This is characterized by a mild depression and slowing of mental and bodily activity. Such a patient sits idly with a depressed expression, considers himself a failure and a disgrace. There is no intellectual defect, disorientation, nor clouding of consciousness.

2. *Acute depression*. In this stage the psychomotor retardation and depression are more marked. Such a patient rarely speaks, except to express hypochondriacal delusions. Such a patient

usually feels that he ruined himself by certain sexual indiscretions in his early life. He also believes the body is deteriorating or that it is no longer functioning. Memory and intellect are still well preserved. Such a patient frequently refuses to eat, feeling that he is unworthy of food or that the food is poisoned. Many of these symptoms will be brought out in the patient to be presented in a few moments.

3. *Depressive stupor*. As the term indicates the patient shows marked psychomotor retardation. Such a patient is usually confined to bed, and refuses to make response to any sort of stimulus. He requires tube feeding and is usually incontinent of both urine and stool. Such a patient fails physically very rapidly, chiefly due to his refusal to eat. It is wise to tube feed such a patient at an early date to prevent dehydration and emaciation.

Numerous transition stages between manic psychosis and depressive psychosis have been described, but will not be discussed here.

The diagnosis of manic-depressive psychosis is frequently apparent, but many such cases resemble schizophrenic reaction-types, an example of which will be presented by Dr. Katzberg in the following paper.

The elation characteristic of manic psychoses is to be differentiated from the elation of general paresis by physical signs (such as Argyll-Robertson pupil, unsteady gait, etc.), and serological tests, which should be performed on all mental cases.

The prognosis of manic-depressive psychoses is generally favorable. However, rarely does a patient overcome an attack in less than three to six months. Recurrent attacks of both depression and mania are frequent. If the patient's personality or disposition prior to the psychosis was a well-balanced one with wide interests, the outlook for recovery is more cheerful. If the psychosis occurs after the fortieth year, when one's capacity to readjust is more limited, the outlook is less favorable. Patients, who do not respond, deteriorate insidiously as evidenced by lack of interest in their surroundings, shallowness of thought and untidiness. However, the intellect and memory are usually well preserved in these deteriorated patients.

Treatment of this type of psychosis includes investigation for and riddance of exogenous and precipitating factors which may have brought on

the psychosis. The chief principle is absolute rest with family interference reduced to a minimum. Because of the constant danger of suicide in the depressive patients, they must be constantly supervised, but tactfully so, lest the impulse to commit suicide be heightened. Suicidal patients should not be made to feel that they are being policed.

Manic patients must be quieted, if possible, by barbiturates and occasionally morphine derivatives. Continuous baths are frequently beneficial, but require considerable nursing help to carry out.

Involucional melancholia, as stated above, is a psychosis of the involucional period, which is approximately from forty to fifty-five years in women and from fifty to sixty-five years in men. It is characterized by anxious or agitated depression without psychomotor retardation, a feeling of unreality, and hypochondriacal and nihilistic delusions. No one of these symptoms is peculiar to the involucional period, but together they become quite characteristic. The term, Involucional Melancholia, is usually reserved for those cases of depression, which have never previously suffered from any form of psychosis. The appearance of such a patient is one of great misery. He is frightened, self-accusatory, wrings his hands constantly, paces about moaning and groaning and making mountains out of molehills. Due to anxiety and agitation and frequent refusal to take food, such a patient also loses weight rapidly and should, therefore, be tube fed at an early date to prevent loss of weight.

The course of involucional melancholia is usually prolonged because such a patient has lost much of his adaptive capacity. So long as the affect or emotional reaction is maintained, recovery is hopeful.

Involucional melancholia differs from depressive psychoses by the presence in the former type of anxiety, agitation, and a feeling of unreality. Treatment consists of institutional care, maintenance of nutrition, and sedation. Suicide must also be guarded against in this type of patient.

Case Report

The patient, an unmarried domestic, was first admitted as a voluntary patient, September 1, 1922. She was then thirty-nine years of age and was a member of the Catholic church.

Three members of her family had been patients in this hospital—one sister and one brother diagnosed as suffering from the manic-depressive type of psychosis and another sister from dementia precox. Her grandparents, parents and collaterals had all been mentally well.

Commitment papers gave the information that the patient was depressed, unable to sleep and refused to eat. She had attempted suicide once by slashing her throat and wrists, once by beating herself with a stick and on one occasion she had attempted to jump into the river.

Examination on admission revealed a depressed, self-accusatory female, well orientated, showing no memory defect and able to talk rationally. Menses at that time were regular and twenty-eight day in type.

During her stay in the hospital she improved considerably and was discharged October 1, 1923, improved but still somewhat depressed.

The patient was re-admitted to the hospital voluntarily on April 24, 1932, at the age of forty-nine, with the history that she had been depressed for three or four months and had had numerous crying spells.

Examination again revealed a depressed female, who complained of inability to eat and a burning sensation in her chest, all of which she believed were due to an illicit sexual relation, which the patient had had at the age of sixteen, thirty-three years prior to this admission. She apparently had passed through the menopause three or four months previous to this admission. She, however, believed that her admission ten years ago was caused by her menopause.

During this hospital stay, the patient has been very depressed, and at times agitated. She insists that she can not live long, says that her soul is lost, and believes that her one incident of waywardness as a girl has brought her here. She states that she has committed the unpardonable sin. She believes the food is poisoned.

The patient has loud crying spells, during which she paces about the ward crying, screaming, pounding the top of her head with her fists, shouting that she is so dry she is dead and should be buried in the river rather than in the ground. She frequently cries out that she has no heart, no lungs, that her soul is lost, that she surely is going to hell. She is of the firm belief that there can be no help for her now that her soul is lost.

SCHIZOPHRENIA*

LOUIS W. KATZBERG, M.D.

Fergus Falls, Minnesota

SCHIZOPHRENIA, in typical form, is a disorder that characteristically consists of a slow, steady deterioration of the entire personality, involving the effective life, and is manifested by disorder of feeling, thought, conduct and increasing withdrawal of interest from the environment.

Approximately 18.7 per cent of all hospital beds in the United States are required for victims of this single disorder—schizophrenia. The following figures represent the percentages of beds occupied by schizophrenia patients in the respective types of hospitals: State Hospitals, 20.4 per cent; County and City Hospitals, 15.7 per cent; United States Veterans Hospitals, 21.3 per cent; Private Hospitals, 12.6 per cent. In addition, there are many patients not under custody. In terms of total economic loss, it is estimated that the disease costs approximately a million dollars a day in the United States alone.

The cause of this disease is still unknown. Characteristically, it appears in the early years of life, that is, at puberty and during adolescence, and it persists for many years. At times it is first noted at a more advanced age. Heredity is but one conditioning factor in its etiology and there are a large number of cases in which heredity does not seem to play a part.

Various hypotheses as to the causation of schizophrenia have been offered, such as auto-intoxication following a disorder of metabolism, or a disordered secretion of the sexual glands. The more commonly accepted idea is that adopted by Adolf Meyer. This view is that schizophrenia is the outcome of a maladaptation of the individual to his environment, the end-result being an accumulation of faulty habits or reactions. The healthy attitude to life's difficulties and problems is a direct, aggressive, matter of fact one, designed to overcome difficulty, once and for all, the individual feeling satisfied and proceeding confidently to the next problem. On the other hand, the individual evidencing an unhealthy reaction may shrink from facing the situation

directly and may sit and hope that some solution will turn up of itself, or the matter will be decided for him. In other instances, he may evade the necessity for definite action by indulging in some substitute which is never satisfactory. A sense of failure is no longer combated by renewed efforts, but by brooding over troubles and by blaming others. Such reactions, occurring only occasionally, are within normal limits; but if they become so frequent as to be habitual, they may lead to total inefficiency and social maladaptation, so that the individual exhibiting them comes to be regarded as abnormal.

As to the actual cause of the precipitation of the mental illness, as a rule one can point to nothing definite. Worry over masturbation for a long period of time is probably the most common history elicited. The patient's feeling of guilt and sin from a habit which he does not seem to be able to break himself of and is no longer bearable, comes to be projected first as ideas of reference, later as delusions and hallucinations. The idea of reference most commonly spoken of is that people can tell by the expression on his face or of his eyes that he has been masturbating. The masturbation itself is of little importance compared with the effect of the individual's reaction to the habit.

Schizophrenic reactions appear to be of exogenous origin, following, at times, various infectious diseases such as malaria, scarlet fever, typhus, typhoid, encephalitis and influenza. Influenza is probably the most common infection playing a causative rôle. Menninger estimated that of 175 patients with psychoses associated with influenza, one-third showed a schizophrenic syndrome.

As to the onset, schizophrenia is a type of mental disorder in which a history is obtained that the patient has shown peculiarities and acted odd for a long time. His personality has shown a change which previously did not manifest itself. Also, if a careful childhood history is taken, frequently perversities and traits such as bedwetting, sensitiveness, fears and bashfulness are elicited. In quite a percentage of cases, the

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individual may have been of a quiet, shy, retiring disposition, making no friendships and living only for himself. This type is found mostly in boys. An irritable, sensitive, nervous, excitable, self-willed individual is observed mostly in girls. One group are, from childhood, lazy, restless, inclined to nasty tricks, do not persevere anywhere and become vagrants and criminals. Another group are those who are conspicuous for their docility, good nature, anxiousness, conscientiousness and diligence, and as patterns of goodness hold themselves aloof from all childish naughtiness.

The symptoms are markedly varied but there are groups of symptoms that stand out more prominently than others. This most prominent symptom is the failure of affect or loss of emotional tone. The individual does not appreciate joy, sorrow or fear, and his attitude is that of marked indifference. Along with this is a dreaminess in which he is very remote from reality. There is marked disharmony between mood and thought. The patient may express ideas which for the normal person would produce remorse or profound depression, without evidencing the corresponding mood. Frequently, there are apparently causeless outbursts of laughter, and a stereotyped, silly, smiling attitude in which there is no real hilarity.

Along with this disharmony between mood and thought content, there is a mental deterioration with a marked change in the patient's personality, which can readily be detected by noticing that the patient has lost his pride in his personal appearance. He gradually becomes more untidy and slovenly, needing constant attention.

Other symptoms are ideas of reference, delusions and hallucinations. The patient interprets the most commonplace occurrences as having special reference to himself. He feels the whole world centers around him.

Hallucinations of hearing are the most common. Next in frequency are haptic hallucinations in which he thinks he feels wireless, or electrical shocks, or taste dope in his food. His delusional ideas are often quite fleeting. Ideas of influence are important and take the form that someone is reading his mind or trying to hypnotize him. In addition to all this, the patient may have a good memory, easily recognize all the people about him, be cognizant of time and location. His general intellectual faculties are unimpaired and the remembrance and grasp of school knowl-

edge are not interfered with. The apparent intellectual deterioration arises from lack of concentration and attention. The judgment is, however, greatly interfered with and he does not appreciate the seriousness of his illness.

The peculiar qualities of the schizophrenic are that his thinking and behavior generally are dependent principally on four conditions: (1) he turns away from reality; (2) his thinking is dominated by his complex to an extent not seen in the normal; (3) he regresses to a childish, infantile or archaic make of thought; and (4) his personality undergoes progressive disintegration. The schizophrenic does think logically but only according to his own lights. He no longer seeks to commune with his fellows, but he lives instead in a world of his own. Here he has no need for clear definition of thinking and the very lack of clearness itself helps to make his existence as much possible as his wishes dictate in his introverted world. The combination of loss of contact with reality and domination of thinking entirely by the emotions centered around certain complexes make all kinds of fantastic delusions possible. The patient in fantasy has anything he wishes for.

As to physical findings of the schizophrenic individual, it is found they are usually poorly nourished, having low blood pressure and well marked vasomotor disorders. The hands, feet, nose and ears show cyanosis and are cold and moist. Often other findings are present, such as dermatographia, exaggerated deep reflexes, and, frequently, widely dilated pupils. Many pathologic findings have been noted in the brain, but no constant relation as yet has been found between the anatomic findings and the mental picture.

Schizophrenia is usually divided into four groups, because of prominence of the various symptoms in individual cases, but the distinctions are only relative and transitions from one clinical form to another are common. The following types are described: simple, hebephrenic, catatonic and paranoid.

Cases classified as simple in type are those that show defects of interest with gradual development of an apathetic state but without striking peculiar behavior and without expression of delusions or hallucinations.

In the hebephrenic type, there is a tendency to silliness, smiling laughter which appears inconsistently expressed, expression of bizarre ideas

and often hallucinations, which appear pleasing.

The catatonic type show prominence of negativistic reactions or various peculiarities of conduct with phases of stupor or excitement (the latter characterized often by impulsive or stereotyped behavior) and of hallucinations.

The paranoid type is characterized by prominence of delusions, particularly ideas of persecution or grandeur, and frequently by a consistent emotional reaction of aggressiveness due to persecutions. The patients affected are usually between the ages of thirty and thirty-five years.

The term *schizophrenic reaction type* or *schizophrenia* is preferred to that of *dementia præcox*.

The latter term, for instance, usually implies a hopeless prognosis and in too many instances has led to an attitude of therapeutic nihilism. There is no doubt that the prognosis is poor, but not to the same extent as the term *dementia præcox* implies. Schizophrenia may come to a standstill at any age and many of its symptoms may clear up very much, or altogether; but if it progresses, it leads to a dementia of a definite character. There are a number who make a social rather than a complete recovery, and others reach a quiescent stage so that they can be cared for at home. In every case, however, we should attempt to come to a clear understanding of underlying and component factors, and should try to discover what factors in the environment per se can be modified

as well as the patient's attitude toward that environment.

All medical men agree that the chief hope of success in treatment is earlier recognition of the disease. In many cases neither the patient, relatives, nor the family doctor recognize that there is very much wrong. If anything is to be accomplished in dealing with mental disorders of this type, attention must be diverted directly toward habit formation and character training. Physicians, especially, but also the parents and the teacher, should be much more familiar with the types of individuals likely to develop this type of mental disorder. All strangeness and bizarre conduct, tantrums, and difficulties of child life should be more closely scrutinized. From this point of view, we have a method of approach that is practical and offers greater possibilities. Under institutional care, there are many that readapt themselves. We can help readjustments to take place by taking an individual interest in cases of this kind. Occupational therapy such as handicraft or outdoor work, or an association of these are of great assistance. A wholly pessimistic attitude is not warranted; still it must be realized that, after all, one can hardly expect a complete recovery. If one can readjust the situation so the patient may get along comfortably and perhaps lead a useful life, truly a great deal has been accomplished.

What Happens to Medical Fees For Saving the Injured?

In the city of New York, thousands of doctors draw very considerable fees from accident cases. These fees do not always come from the injured persons but oftener from the insurance companies. They are not always paid willingly or entirely and are frequently subject to adjustment. Nearly 2,000 of such fees are in controversy in the City of New York, entailing a delay for the doctor in obtaining remuneration and for the insurance company in clearing its record.

But New York State is trying a new experiment for adjusting such fees equitably and expeditiously. Inspired by the voluntary arbitration system of the National Bureau of Casualty and Surety Underwriters, the amendments to the New York Workmen's Compensation Act passed in 1935 contain a provision for the arbitration of disputes on medical fees.

The Compensation Insurance Rating Board, in conference with officials of the Labor Department and the American Arbitration Association has worked out

an administrative plan for making this provision effective. Under this plan the Insurance Carrier files an Objection with the Industrial Commission, with which is also filed an agreement to arbitrate and to abide by the award which is signed by both parties to the dispute. The Rating Board then arranges for a hearing before four arbitrators, two appointed by each side from special panels of doctors that have been appointed for the purpose through the coöperation of the County Medical Societies. When the four arbitrators fail to agree on a decision they select a fifth doctor whose decision then becomes final. It is anticipated that the questions arbitrated will involve not only the size of the doctor's fees but also his competency and his disposition to follow ethical standards.

The Arbitration Journal for January tells the story of this experiment, describes the law under which it is being made and the machinery for making such adjustments. The story is part of a Symposium on Arbitration in Insurance which portrays the whole picture of what the insurance companies and arbitration are doing to meet the problems which arise after an accident has occurred.

CASE REPORT

ACUTE VASOSPASTIC HYPERTENSION*

HAROLD C. HABEIN, M.D., and HENRY P. WAGENER, M. D.

Rochester, Minnesota

OCCASIONAL cases classified as instances of essential hypertension are characterized by exacerbations and partial remissions of a severe, generalized vasospastic disturbance. The clinical features are similar to the vascular manifestations of toxemia of pregnancy and one cannot escape the impression that the mechanism of the disturbance is some sort of toxic effect on a susceptible or irritable vascular system. It seems likely that in a careful study of patients in the active phases of this disease, the chances of discovering such a toxic factor would be greatest. It is on account of the severely acute onset of the disease, and the possible etiologic relationship to infection, that the following case is reported.

Report of Case

A single, Jewish male, aged thirty-four years, first entered the clinic in August, 1927. His complaint was of left inguinal hernia. The family history was negative except that his mother had hypertension. Except for an attack of influenza in 1918, and several attacks of tonsillitis and quinsy, his past history was unimportant. The patient appeared healthy. The blood pressure was 115 mm. of mercury systolic and 68 diastolic. The tonsils were definitely infected. Both inguinal rings were moderately relaxed but definite hernia was not demonstrated. The urine was normal, the Wassermann test of the blood was negative, the concentration of hemoglobin was 14.5 gm. per 100 c.c. of blood, erythrocytes numbered 4,260,000 and leukocytes 9,100 per cubic millimeter of blood.

The man next came to the clinic in October, 1934. His complaint was of a rash on his legs and pain, which he had had for two months in both ankles. This trouble came at a time when he was having an attack of tonsillitis. His physician had painted the ankles with a weak solution of iodine. Later the patient applied a stronger solution of iodine and marked inflammation followed. A diagnosis of dermatitis venenata was made. On questioning, the patient also gave a history suggestive of peptic ulcer, and roentgenologic examination revealed evidence of a duodenal ulcer. The blood pressure was 120 systolic and 70 diastolic. The urine was normal. The concentration of hemoglobin was 14.3 gm. and erythrocytes numbered 4,700,000, and leukocytes 11,200. The ocular fundi, examined in the course of visual refraction, were negative. The vision was 6/6 in each eye. The tonsils were definitely infected and tonsillectomy was advised. A diet for an ambulatory patient with duodenal ulcer was prescribed.

The patient was again seen at the clinic on February 9, 1935. He stated that following his last visit to the

clinic he had continued to have some pains in his legs that the pains had interfered slightly with his walking but that otherwise he had felt well. His duodenal ulcer had given him no trouble. In January, 1935, three

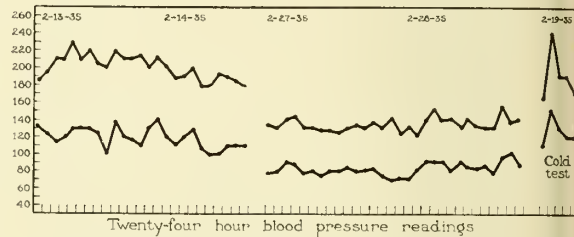


Fig. 1. The first portion of the chart illustrates the twenty four hour reading of blood pressure on admission to the hospital. The second portion illustrates the twenty-four hour reading of blood pressure following tonsillectomy. The third portion indicates results of a cold test.

weeks before he returned to the clinic, he was on a business trip to the west coast. While riding on the train he was suddenly seized with violent headache. He was nauseated but did not vomit; his vision was blurred and at times there was diplopia. He also had severe vertigo. His symptoms were so violent and severe that a physician was called, who found his blood pressure to be 220 systolic and 135 diastolic. He was given some sedatives and continued his journey, reaching his destination the next day. He spent two weeks in a hospital in California. When he arrived at the clinic he was immediately hospitalized. On examination he appeared acutely ill, there was marked pallor of the face and he complained of headache and of pain in the back of his neck. The blood pressure was 220 systolic and 130 diastolic. The twenty-four hour blood pressure curve is indicated in Figure 1. The heart was not enlarged and there were no murmurs. The pulse rate averaged 90. There was no edema. The urine was normal. The results of tests of renal function and of other laboratory determinations, both on admission and subsequently, are shown in Table I.

The ophthalmoscopic examination, on February 10, 1935, revealed bilateral acute diffuse retinitis of the angiospastic type, with edema of the optic disk, diffuse edema of the retina, involving the macular region, cotton-wool patches, and hemorrhagic areas in the retina. Elevation of the optic disks measured 1 D. in the right eye and 3 D. in the left eye. The retinal arterioles were generally but not intensely narrowed and there was no evident localized spasm or sclerosis.

A specimen of venous blood was taken and injected into a dog to determine whether or not any pressor effect could be produced. Following the injection, the dog's blood pressure fell instead of rising and the dog died an hour later for no apparent reason. Conclusions cannot be drawn from this experiment. Tests for epinephrine in the patient's blood were negative.

*Dr. Harold C. Habein is of the Division of Medicine and Dr. H. P. Wagener of the Section on Ophthalmology, The Mayo Clinic, Rochester, Minnesota. Read before the meeting of the Minnesota Society of Internal Medicine, Duluth, Minnesota, June 6, 1936.

CASE REPORT

The patient was kept in bed and phenobarbital, grain 4 (0.05 gm.), was given three times a day. Symptomatic improvement was noted from day to day. In view of the definitely infected tonsils and the history of repeated tonsillitis and quinsy, and because of the possible relationship between the patient's acute angiospastic disease and this infection, tonsillectomy was ad-

systolic and 120 diastolic. The vision was 6/10 in the right eye and 6/12 in the left eye. Examination of the perimetric fields revealed small, relative central scotomas and a few scattered peripheral scotomas. Ophthalmoscopic examination revealed general arteriolar narrowing graded 2, on a scale in which 4 is maximal; localized spastic constrictions, graded 2, in some of the

TABLE I. RESULTS OF LABORATORY TESTS

Date	Urine						Blood						Blood pressure	
	Albumin	Erythrocytes, grade	Specific gravity	Excretion of phenolsulphon-phthalein, per cent	Urea clearance, c.c. per minute	Sulphate clearance, c.c. per minute	Hemoglobin, gm. per 100 c.c.	Erythrocytes, millions per cu. mm.	Leukocytes, per cu. mm.	Urea, mg. per 100 c.c.	Serum sulphates, mg. per 100 c.c.	Creatinine, mg. per 100 c.c.	Systolic, mm. of mercury	Diastolic, mm. of mercury
8-9-27	0	0	1.035				14.5	4.26	9,100				115	68
10-9-34	0	0	1.023				14.3	4.70	11,200				120	70
2-12-35	* 0	1 0	1.008 1.020	45 20 5	40.6	13.6	14.5	4.30	12,700	20	4.7		230	130
2-26-35	* 0	0 0	1.019 1.024				9.0	2.40	6,400				130	80
4-30-35	0	0	1.021				14.9	4.15	9,200	24	4.8		180 168	125 120
6-10-35	0	0	1.022					4.01					158	112
7-31-35	0	0	1.031	50 13 5 3	45.2	16.5	13.6	4.90	10,200	24	4.3		118 135	78 102
10-28-35	0	0	1.027				15.9	4.51	6,900	22	3.5	1.2	165 138	110 88
2-14-35:	Concentration test, 1.014-1.020 Dilution test, 1.006-1.018													

*Trace

vised and was carried out February 23, 1935, fifteen days after admission to the hospital. Aside from a little more oozing of blood from the tonsillar fossæ than usual, the operation was completed without incident. During the two weeks' stay in the hospital before tonsillectomy, there had been a gradual lowering of blood pressure and the day before the tonsillectomy the systolic blood pressure was 170 and the diastolic 120. Three days after tonsillectomy the systolic blood pressure was 130 and the diastolic 80. During the following nine days, until the patient's dismissal from the hospital, on March 2, 1935, the blood pressure varied between 130 systolic and 80 diastolic and 130 systolic and 90 diastolic, as taken each morning. The blood pressure for twenty-four hours is indicated in Figure 1. The patient's weight, on entrance, was 125 pounds (56.7 kg.), and on dismissal, 125½ pounds (56.9 kg.). He stated that he felt very well.

During the patient's stay in the hospital, the edema of the optic disks and retinas receded gradually and a macular star formed in each eye. The degree of generalized arteriolar constriction apparently varied at different examinations, and at times localized spastic constrictions were seen in some of the arterioles. By the time of the patient's dismissal from the hospital, on March 2, 1935, the retinitis was definitely receding and the vision had improved so that he was able to read print of moderate size. He was dismissed with the advice to continue rest at home. Sodium amytal, grains 2 (0.12 gm.) three times a day, was prescribed.

The patient returned April 3, 1935, for reexamination, approximately two months after he had left the hospital. He stated that he felt perfectly well and had gained 10 pounds (4.5 kg.). The blood pressure at that time varied from 180 systolic and 125 diastolic to 168

arterioles; residua of angiospastic retinitis with mild, not measurable, edema of the disks; partial macular stars, and a few scattered hemorrhagic areas. The patient was advised to continue on the regimen previously outlined. The results of laboratory studies are shown in Table I as are the results of studies of blood pressure on subsequent visits.

The next examination was approximately six weeks later, June 10, 1935. The patient stated that he felt very well, was gaining gradually in weight and felt that he had entirely recovered. He was anxious to be permitted to return to work. His blood pressure at that time was 158 systolic and 112 diastolic. Ophthalmoscopic examination revealed that the retinas had cleared still further. Only slight residual edema was present in the macular regions but the localized spastic constriction seemed more marked in some of the arterioles (grade 3).

The patient's next visit was on July 31, 1935. He stated he still felt well. He had had no recurrence of headache or vertigo, his weight was stationary and he volunteered the information that his vision had improved. The blood pressure ranged from 118 systolic and 78 diastolic to 135 systolic and 102 diastolic. Ophthalmoscopic examination at this time revealed that the retinas were essentially clear except for slight residual increase in connective tissue around the disks and in the macular regions. The retinal arterioles were only mildly narrowed, grade 1, and the localized spastic constrictions had essentially disappeared.

Three months later, October 28, 1935, the patient was still free of symptoms. He had been allowed to do part-time work and he took several rest periods of one hour each day. The blood pressure ranged from 165 systolic and 110 diastolic to 138 systolic and 88 dias-

tolic. The vision was 6/7 in each eye. The retinas were clearer except for mild residual scarring from previous retinitis. No recent retinal lesions had appeared since the previous examination. The generalized narrowing of the arterioles remained essentially the same and mild sclerosis, grade 1, had developed secondary to the spastic constriction of some of the arterioles.

The patient's last visit to the clinic was on February 17, 1936, approximately one year after the onset of his illness. He continued to feel perfectly well. The blood pressure was 148 systolic and 108 diastolic. The vision was 6/6 in the right eye and 6/7 in the left. Ophthalmoscopic examination revealed mild blurring of the margins of the disks, attributable to connective tissue, mild scarring of the macular retina and some deposits of pigment in the peripheral retina, secondary to the previous edema. The arterioles of the right eye were mildly narrowed and mildly sclerosed, both grade 1, and sclerosis and narrowing of some of the arterioles of the left retina was graded 2. Active retinitis was not present. The urine was normal and renal functional tests gave no indication of renal abnormality.*

Comment

This case brings up several interesting problems for discussion. In every case of hypertension two questions immediately arise: 1. What is the etiology? 2. What is the treatment? The etiology of hypertension has been a subject of investigation for many years. The various theories as to the cause of hypertension have been adequately reviewed by several authors^{2,7,8} and will not be discussed here except as infection may be an etiologic factor. The indirect part that infection plays in producing hypertension, by causing primary glomerular nephritis with secondary hypertension, is a matter of common experience. Some authors, notably Volhard, would consider the case that has been reported one of primary renal disease. It is hard to believe that this could be true in the presence of normal urine, relatively normal results of renal functional tests and absence of edema and secondary anemia. If the vascular reactions in the retinas were evidence of the vascular reactions throughout the other organs of the body, it is surprising that more evidence of renal damage was not encountered. It is likely, however, that if the angiospastic disease had continued, renal insufficiency would have developed. It is true that angiospastic retinitis of this type can occur either in cases of glomerular nephritis or in cases of diffuse arteriolar disease. However, retinitis of such severity is extremely rare in cases of acute glomerular nephritis and in those of chronic glomerular nephritis it usually accompanies the terminal phases of the disease. Since the latter diagnosis was untenable in the present case, it seemed most logical to interpret the retinitis as an indication of acute vasospastic hypertensive disease.

In some respects this case is similar to the case reported by Koenigsberger, Bannick, Watson, and Beaver.^{1,4,5,6} In their case, in which the patient was aged

twenty-nine years, acute vasospastic hypertension developed following a streptococcal sore throat and subsequent tonsillectomy. The early feature of the disease was intense vasospastic hypertension with no evidence of cardiorenal disease. Later, arteriolar sclerosis, retinitis, and renal insufficiency developed from which the patient died two years after the onset of his illness. The authors concluded that infection played a dominant part in the etiology of the hypertension of the patient whose case they reported.

Heilman, working in Rosenow's laboratory at The Mayo Clinic, commonly finds a green-producing streptococcus with neurotropic cataphoretic velocity in nasopharyngeal cultures of patients who are in the active phases of diffuse vasospastic disease with hypertension. Furthermore, in the serum of these patients antibodies are found which are specific for this organism as measured by the charge-reducing effect in the electrical field. In the remissions of the disease, organisms with these characteristics are usually not found. Heilman expressed the belief that a specific increased reactivity to toxins formed by streptococci plays a prominent part in production of vasospastic hypertensive disease. These observations are of great interest and are worthy of further study.

The etiologic part played by the tonsillar infection in the case reported is hard to evaluate definitely. It seems, however, that with the prompt fall in blood pressure and the subsequent clinical improvement of the patient the relationship is more than a coincident one. Tonsillectomy as a routine procedure in hypertension is not to be recommended but, in the presence of acute or recurring episodes of vasospastic hypertensive disease, removal of foci of infection should be carefully considered.

Whether the toxin produced by infection acts directly on the arterioles or through the sympathetic nervous system is not known. Further investigation on the problem of vascular hypersensitivity may uncover a clue to the etiology of vasospastic hypertension.

Little as is known of the treatment of hypertension, certain indications are clear. Rest and relaxation have a tendency to keep the patient's blood pressure low. Fatigue, physical activity, and emotional stress will cause the blood pressure to rise. Diet plays little or no part in the treatment except that the diet should be well balanced and should contain adequate vitamins and that the weight should be kept at the point which is normal or slightly below normal for the patient's age and height. Mild sedatives, such as amytal or phenobarbital, should be judiciously used as indicated. The possibility of surgical relief through ramisection or sympathectomy should be kept in mind. If operation is to be performed, it must be done before irreparable damage to the cardiovascular renal system has taken place.

Summary and Conclusions

1. A case of acute vasospastic hypertensive disease and retinitis with temporary recovery is reported.
2. There is no evidence in the reported case to indi-

(Continued on Page 197)

*Since this paper was written the patient returned to the clinic for observation. This was on August 10, 1936. He stated that he felt well and was working every day. His vision was 6/7 with the right eye and 6/6 with the left. Ophthalmoscopic examination did not reveal evidence of active retinitis and only a minimal amount of retinal arterial sclerosis, grade 1, was found. Blood pressures were 140 systolic and 100 diastolic. The concentration of blood urea was 30 mg. per 100 c.c. The specific gravity of the urine was 1.031. The urine did not contain albumin or erythrocytes.

EDITORIAL

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BUSINESS MANAGER

J. R. BRUCE, Saint Paul

Volume 20 MARCH, 1937 Number 3

Chemotherapy in Streptococcic Infections

SEVERE septic conditions with or without septicemia still are the *crux medicorum*. Since the experiments of Ehrlich many investigators have striven towards the goal of the *sterilisatio magna*. Although we no longer hope for such a universal remedy, we are still continually on the lookout for a drug that would bring about cures in certain groups of severe infections. Thus every few years a new drug is hailed as the fulfillment of one of those hopes—only too often turning out to be just another disappointment.

In the past two years a new group of substances has been given extensive trials, experimentally as well as clinically. G. Domagk in Germany demonstrated in his experiments with azo dyes that if they are linked with the sulfona-

mide radical they exhibit a remarkable protection against streptococci. Several substances in this group have shown almost selective effects in streptococcic infections. Those giving promising results are the hydrochloride of 4-sulfamido-2, 4-diaminoazo-benzol, the 4-sulfamido-phenyl-2-azo-7-acetylamino - 1-hydroxy-naphthalene 3: 6-disulfonic acid ("prontosil"),* issued as the disodium salt in 2.5 per cent solution, the p-aminophenyl-sulfonamide ("prontylin"),* and sulfamido-chrysoidin hydrochloride ("rubiazol"). As an experimental animal, usually the mouse, was used, because this animal shows hardly any natural immunity to intraperitoneal infection with human hemolytic streptococci. Domagk's promising results started animal and clinical experiments all over Europe, and numerous articles appeared in Germany, Austria, France, and England. Not all investigators were able to corroborate completely the original findings in animal experiments, probably due to the fact that not always the same strains of streptococci were used, some being more virulent, or some exhibiting greater sensitivity to the drug than others, but all reported definite protective and therapeutic properties of these substances.

Another important finding, on which the entire literature on this subject agrees, is the drug's relatively low toxicity. Animals (mice, rabbits, cats) tolerated relatively large doses without toxic symptoms. This, of course, spurred the clinicians to try it on human beings, and a considerable amount of experience has been laid down in a number of articles. In two conditions, erysipelas and puerperal sepsis, the results seem particularly promising. Certain clinicians hailed the drugs as a specific against erysipelas. Otto Scheurer (Germany, 1936) found that the temperature dropped to normal in one to two days after the use of "prontosil," and that the local process became stationary at once. Kramer (Germany, 1936) reported similar results in twenty-three cases of erysipelas; the temperature and pulse were normal on the average after four days, while this average was eleven days in twenty-three controls. The local retrogression

*Winthrop Chemical Company.

was at times very rapid, and a few patients reported some relief of the burning sensation and the tension within half an hour. Meyer-Heine and Huguenin (France, 1936) reported the formidable series of 150 cases of erysipelas treated with "rubiazol" without a mortality, including eight infants from fifteen days to sixteen months old.

Great impression was made by the report by Colebrook and Kenny from the Queen Charlotte Hospital in London (June, 1936). They experimented carefully with mice, using the soluble "prontosil." The results were encouraging, as were those in a series of puerperal infections. In their series of thirty-eight cases of puerperal fever, infected with hemolytic streptococci, the drug exhibited a definitely beneficial effect. The mortality was greatly reduced, compared with similar series prior to this treatment. Three patients, in which a general peritonitis was diagnosed, recovered without surgery.

Long and Bliss very recently published their results with "prontosil solution" and "prontylin" in the *Journal of the American Medical Association*. They, too, reported a relatively low toxicity, in spite of the fact that a fair number of patients complained of nausea and emesis. These symptoms, however, occurred practically only after intravenous injections of large doses. Injections given subcutaneously or intramuscularly were much better tolerated.

In practically every type of streptococcic condition these drugs were tried, only too often in hopeless cases, which do not permit any conclusions.

Reports of undesirable toxic effects are almost absent in the early reports, or are completely overshadowed by the enthusiasm of the authors. Gradually more and more toxic observations have become known, although all investigators agree that the toxicity is quite low. Fairly often an irritation of the urinary system has been noted: the appearance of red blood cells, epithelium or casts; the appearance of a trace or an increase of albumin (20 per cent in Colebrook and Kenny's series). Few cases develop a cyanosis due to sulphhaemoglobinemia (this, however, may be due to simultaneous intake of magnesium sulphate). Some patients complained of some burning in the infected tissues. Occasionally a faint feeling of nausea may follow

larger intravenous doses, also frontal headaches and an immediate urge to go to stool. Occasionally the skin may take on a slightly reddish color. It is important that no undesirable effects on the circulation have been observed. In the earlier reports no effect on the leukocytes was noted, some authors reported a transitory increase. It seems, however, that some physicians have experiences to the contrary, and occasionally have observed a lowering of the leukocyte count to almost dangerous levels.†

It is an advantage that these drugs can be administered by any route, but as toxic manifestations appear practically only after intravenous injections, this route should be used only if absolutely necessary. Combined oral (or rectal) and parenteral administration seems to be the favorite method.

The mode of action is still unknown, the drugs being excreted unchanged through the kidneys. There is no definite evidence of accumulation of the dye in any organ or cell group. The almost selective action in streptococcic infections (recent investigations show some, though relatively slight, action on certain types of pneumococci and staphylococci) makes it improbable that these substances have an activating action on the reticulo-endothelial system.

Much more investigation, especially from a clinical standpoint, with proper controls, and the establishment of the mode of action of these substances is necessary before their value can be really established. One hopes that we are not doomed to another disappointment.

ROBERT ROSENTHAL.

Center for Continuation Study

NO ONE'S education is ever complete. This is true not only of the professions, but of non-professional vocations. Some are able to keep up with advances in their particular sphere through the available literature or through contacts available in the centers of population. Few are able to leave their vocations for any extended period of time to add to their fund of knowledge.

The University of Minnesota has offered for some time certain extension classes, correspondence courses, short courses and summer courses, and last November opened its Center for Con-

†Personal communications.

uation Study where courses lasting from a few days to a few weeks in a variety of subjects are being held. The Center is located on the old campus of the University across the street from the old Armory and is operated as a separate department under the direction of Harold Benjamin, Ph.D. The Center is housed in a most up-to-date building providing living quarters for some seventy-eight men or women. The lounging room, dining room and single and double bedrooms are most attractively furnished. Included in the building are four class rooms, a seminar room and a small chapel equipped with a Hammond electric organ, not to mention an underground garage with accommodations for more than 200 cars. All this is available including fees for the courses at most moderate prices. Certainly the physical equipment of the Center makes attendance at an institute most attractive and easy, and there need be no distractions from the student's application to his studies. The Center is designed for serious study rather than for conventions or social gatherings.

Since the opening of the Center in November last, institutes have been held for corporation managers, parent education leaders, nursery school teachers, physicians, pharmacists, and for probation and parole officers. The medical courses lasted from January 17 to February 13, one week being devoted to each of the following subjects: Traumatic Surgery, Obstetrics and Gynecology, Pediatrics, and Internal Medicine. Some twenty doctors attended each week.

The Center is the crystallization of the idea that the University should expand its services for citizens of the state. The Center is still in its infancy, but should have a wide field of influence.

Christian Science

ALTHOUGH Christian Science is considered by its adherents to be a religious topic it is one which concerns the medical profession. Christian Science is entirely right, medicine is entirely wrong. Physicians may remain discreetly silent when the subject is discussed, as it seems perfectly obvious that one who has devoted the major part of his thought and time to the study of physical and mental ills can scarcely accept the concepts that disease does not

exist except in the minds of the afflicted. Much as one might wish this were true and in spite of the basis in the Christian religion for such a belief, no physician who uses what God-given intelligence he may have can accept such a belief which is so contrary to experience.

Physicians have been accused, and doubtless rightly so in many instances, of giving too much consideration to physical signs of disease and not enough to the effect of the mind on functions of the body. On the other hand, psychiatrists have been guilty at times of being so concerned with mental manifestations that they have overlooked physical ills which accounted for mental disturbances. A human being is a complex machine whose mental and emotional make-up must be considered as well as his physical body. There is nothing new about this fact and the medical advisor has long used it consciously or unconsciously in treating his patients.

The name Christian Science implies that it is a science. It certainly has ignored medical science and one science cannot ignore another and continue to be a science. Christian Science is deductive in what little logic it uses, and revelations as to its sources are of interest to the medical profession. A recent publication* by Haushalter regarding the source of the ideas purporting to be a revelation and promulgated by Mary Baker Eddy is intriguing. After an exhaustive search of the possible sources of the ideas expressed in *Science and Health* the author proves very conclusively that Mary Baker Eddy appropriated the ideas of the German philosopher, Hegel, as expounded in a manuscript entitled "Metaphysical Religion of Hegel," written by the German born man of letters, Francis Lieber, and sent, in 1866, to Hiram S. Crafts, a close associate of the founder of Christian Science at the time. Haushalter directly accuses Mary Baker Eddy of not only using Hegel's ideas but of absolute plagiarism, and supports his accusation by quoting from the manuscript and then reproducing a passage from *Science and Health* in many instances slightly altered in wording but so often word for word that the reader is convinced.

This appropriation of Hegel's ideas explains the portions of *Science and Health* which evince

*Haushalter, Walter M.: Mrs. Eddy Purloins from Hegel. Boston: A. A. Beauchamp, 1936.

deep philosophical thought mixed with non-understandable grouping of words. Comparing *Science and Health* with other writings of its authoress, Mark Twain and others have been convinced that Mary Baker Eddy was not alone responsible for the volume.

In 1912 *Science and Health* was first translated into German. The writer well remembers the loud guffaws with which a class of medical

students greeted the ideas expressed in *Science and Health* at a lecture given in Munich in 1911. Little did they know, nor the world know, that many of these ideas were those of their own countryman, Hegel.

Science is continually seeking after truth. Mary Baker Eddy strongly condemned plagiarism as a violation of the commandment, "Thou shalt not steal." The accusation is serious.

CENTER FOR CONTINUATION STUDY—UNIVERSITY OF MINNESOTA

Post-Graduate Medical Institutes

THREE institutes will be held this spring. The subjects will be roentgenologic diagnosis, irradiation therapy, and physical therapy. The tentative dates are April 12 to April 24, 1937. Any registered physician may enroll in one or more of the courses. Technicians or physiotherapists will not be admitted.

The winter institutes in traumatic surgery, obstetrics, gynecology, pediatrics, and internal medicine were very successful. The enthusiasm displayed by the physicians and teachers convinced all skeptics of the desirability of the plan. A study of instructional methods showed that the most successful institutes were those which met the needs of the students. In the future all classes will be organized on the basis of requests for certain institutes.

A number of physicians have written asking for further instruction in roentgenologic diagnosis, irradiation therapy, and physical therapy. In order that classes can be formed, it will be necessary for all physicians who are interested in these subjects to write at once so that we may organize the instruction on the basis of the group.

Institute No. 5. Roentgenologic Diagnosis

April 12 to April 17, 1937

Faculty: LEO G. RIGLER, M.D., Professor of Roentgenology, and associates in Medical and Graduate Schools.

Curriculum: 36 hours of instruction in principles of roentgenological diagnosis. Lectures, demonstrations and film reading clinics.

Recommended for: (1) General and special practitioners who own an apparatus.

(2) Practitioners who refer cases for roentgenologic diagnosis.

(3) Roentgenologists.

Tuition: \$15.00. Room at Center: \$5.00 and up per course. Meals at Center: \$8.70 per course.

Institute No. 6. Irradiation Therapy

April 19 to April 21, 1937

Faculty: K. W. STENSTROM, Ph.D., Professor of Biophysics and associates in Medical and Graduate Schools.

Curriculum: 18 hours of instruction in clinical applications and principles of therapy with radium, radon and deep x-ray. Presentation of patients, illustrating practical applications.

Recommended for: (1) Those who practice surgery (Full or part-time).

(2) Practitioners who refer patients for irradiation therapy.

(3) Roentgenologists.

Tuition: \$7.50. Room at Center: \$3.00 per course, and meals at Center: \$4.35 per course.

Institute No. 7. Physical Therapy

April 22 to April 24, 1937

Faculty: MILAND E. KNAPP, M.D., Director of Department of Physical Therapy, Minneapolis General Hospital, and associates in Medical and Graduate Schools.

Curriculum: 18 hours of instruction in principles and application of physical therapeutic methods.

Recommended for: (1) Those who do traumatic surgery (Full or part-time).

(2) All general and special practitioners who refer patients for physical treatment.

Tuition: \$7.50. Room at Center: \$3.00 per course and up; Meals at Center: \$4.35 per course.

Special Notice.—Please write at once if you are interested. If a sufficient number express the desire to take these courses, they will be formed April 1, 1937, to start April 12 and thereafter as announced above. Address correspondence to William A. O'Brien, M.D., Center for Continuation Study, University of Minnesota, Minneapolis, Minnesota.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

County Officers' Conference

A résumé of the proceedings of the annual County Officers' Conference, held February 27 in Saint Paul, will be published in these columns next month. Watch for it.

Notes From Chicago

Impressive at the outstanding Northwest Medical Conference held in Chicago, February 14, was the similarity of the problems with which state medical societies are struggling in every one of the twelve or more states represented at the conference.

Medical care of the indigent, medical care of recipients of Old-Age Assistance and other recipients of social security benefits, post-graduate medical education, under-graduate education in medical economics, group hospitalization—all these are seriously concerning the officers of medical societies in this region.

They were discussed at length and helpfully at the conference. Important and stimulating studies were reported, particularly in under-graduate education, in medical economics, and in post-graduate education.

Post-Graduate Education

It is undoubtedly an encouraging sign that while medical organizations are concerning themselves to an unprecedented extent with administrative problems of public welfare they are not neglecting their essential function as agencies for the extension to their members of post-graduate education.

The medical society that neglects this phase of its work becomes sterile and open to serious criticism.

Dr. R. L. Sensenich of Indiana reported to

the conference that thirty-four out of the state medical societies are concerned in some form of organized post-graduate education. In twenty-five states medical societies sponsor the courses. In twenty-two the societies conduct the courses themselves. In eighteen the courses are both sponsored and conducted by the medical societies.

New Plans

Only two state societies failed to answer the questionnaire sent them on the subject. Only ten reported no courses at all and, of these, several are making plans to begin organized courses shortly. Just one state reported abandonment of courses for lack of interest.

As in Minnesota, post-graduate education is being extended everywhere and will be extended still more by coöperation with the social security administration.

Refresher courses financed with social security funds have progressed faster in some of the other states of this region, notably Wisconsin and Illinois. But Minnesota has had a winter course under these auspices at the University and a series out in the state is planned.

Minnesota's Continuation Courses

Minnesota's departure into so-called adult education at the Center for Continuation Study at the University appeared to be unique among the states represented at the conference. These continuation courses have been held at the Center for the first time this year. They are financed by a moderate fee and students live at the center on the campus for the period of the course. The success of this year's medical courses indicates that they will occupy an important place in post-graduate education in Minnesota.

Under-Graduate Economics

The urgent need for thorough-going under-graduate education in the economics of medicine and in its social relationships was agreed upon by everybody who took part in the interesting symposium on medical economics.

According to Mr. William J. Burns, executive secretary of the Michigan State Medical Association, most medical students have a very vague idea indeed of what they are likely to meet after they enter upon their careers as practitioners.

Mr. Burns prepared a questionnaire for senior medical students in two classes, 1935-36 and 1936-37. Some interesting incidental information appeared on the questionnaires.

They Desire Independence

More than half of these students planned to practice in a large city. Approximately 73 per cent last year and 64 per cent this year planned to enter general practice as opposed to specialization. They estimated their life expectancy after graduation at thirty-six and thirty-seven years and the number of years they might have ahead of them to practice medicine at thirty-two and thirty years. About 76 and 80 per cent, respectively, desired to practice medicine on an independent basis; the rest favored a regular salary.

Answers to the question "What are you going to do to help your profession" were the same for each year. They were divided between the following responses: "Do research work"; "Be honest"; "Work for organized medicine"; "Don't know."

It was interesting to Minnesota men (of whom there were a considerable number at the conference) to observe that Minnesota is decidedly in the lead in its development of good working relations between the physicians and the official agencies in charge of administration of social security.

Minnesota Law Unique

Minnesota's law which provides that recipients of Old Age Assistance may receive medical, nursing, dental and hospital care in excess of pension allotments appears to be unique among the states of the north and middle west. This provision in Minnesota's law was secured because the Committee on Public Policy and

Legislation was alert to the need before the law took shape at the 1936 special session.

The situation in North Dakota was unique among the states represented and was discussed at length because of its grave possibilities.

"Mutual Aid" In North America

In North Dakota, according to Dr. A. D. McCannel of Minot, the Resettlement Administration together with state agencies has formed what is known as the North Dakota Mutual Aid Society. Medical care is provided through this society to all of the recipients of aid from the Resettlement Administration. That means, in North Dakota, fully one-half of the population. Physicians are paid for medical care for these clients at a rate of 50 per cent of normal fees.

Practically all physicians of the state are co-operating on this basis; they could scarcely do otherwise according to Dr. McCannel.

Minnesota with a comparatively small resettlement project faces no such problem.

New Studies In Medical Care

A grant of \$165,000 has been announced by the Julius Rosenwald Fund for research on medical economics.

This grant is to be expended over a five year period by a Committee on Research in Medical Economics of which Michael M. Davis, staff member of the Fund is to be chairman.

Other members are Robert E. Chaddock, professor of statistics, Columbia University; Henry S. Dennison, president, Dennison Manufacturing Company, Framingham, Mass.; Walton H. Hamilton, professor of law, Yale University and director, Bureau of Research, Social Security Board, Washington; Elvin S. Johnson, director, New School for Social Research, New York; Paul U. Kellogg, editor, *Survey Graphic*, New York; Harry A. Millis, professor of economics, University of Chicago, and Fred M. Stein, retired banker, New York.

Advisory Committee

It is to be noted that there are no physicians on this committee though an advisory committee includes the following physician members: Dr. Samuel Bradbury, Philadelphia; Dr. Alfred E.

ohn, New York; Dr. Alice Hamilton, Washington; Dr. Ludwig Hektoen, Chicago, and Dr. Franklin McLean, Chicago.

Said the original announcement of the grant:

"This committee will conduct and assist studies in the social and economic aspects of medical care; will train personnel for this field; and, in cooperation with the medical profession and other agencies, will furnish information and consultation services in behalf of rendering medical care more widely available to the people at costs within their means. The committee will have headquarters in New York City."

Hospital Grant

This grant was made by the fund shortly after another grant of \$100,000 had been made to the American Hospital Association for the study and development of voluntary hospital insurance.

The program will be carried forward, according to plans announced at the annual meeting of the Fund in Chicago, through a special committee on hospital service of which C. Rufus Forem, of the staff of the Fund, will be executive director.

The work of the committee will include two phases according to the announcement. The first will take the form of advice and consultation on existing plans concerning actuarial data, benefits, methods of organization, public relations and annual subscription rates; the second will take the form of advice and assistance on the relations of these hospital service plans to the medical profession, to public welfare activities, state departments of insurance, private insurance companies, hospital administration and accounting.

Statistics and Common Sense

Thus do the studies pile up. Statistics are important as every physician knows. He knows, also, that interpretation of statistics from a standpoint of common sense and practical experience is important, too.

Only the practicing physician who is conspicuously absent from the research councils of the Rosenwald Fund can supply the practical experience.

Liquor Law Violator

In times past medical violators of the liquor laws were not often members of the Minnesota State Medical Association. It is to be hoped that the physicians referred to in Liquor Commissioner William Mahoney's letter of February 25, printed in full below, are not members either and that those who are will do their utmost to prevent any such disgraceful violation on the part of any medical practitioner, member or non-member, in Minnesota.

STATE OF MINNESOTA

Office of

LIQUOR CONTROL COMMISSIONER

2643-45 University Ave., Saint Paul, Minn.

February 24, 1937

E. A. Meyerding, M.D.

Secretary

Minnesota State Medical Association

11 West Summit Avenue

Saint Paul, Minnesota

My dear Dr. Meyerding:

I am glad to receive your offer of cooperation in keeping the members of the medical fraternity in the straight and narrow path. I regret we have a great deal of trouble with many persons who hang the letters "M.D." to the tail end of their name. I don't know what professional affiliations they may have nor their warrant for their title, but I do know that they are lacking in professional honor and sell their services mighty cheap, as many admit they get only 5c per prescription and they signed them in blocks of fifty to a hundred at a time. I assume that during the present economic stress even doctors are impelled to do things they might not in more prosperous times.

As you perhaps may know, we have had a number of physicians before the Board of Medical Examiners and I have a communication that they have been disciplined by receiving a "slap on the wrist." I hope it will have a salutary effect and that they will go away and sin no more, but I am certainly going to keep after law violators regardless of their business or professional standing until the guilty are routed out. I do not believe the average person has very keen moral scruples about violating the liquor law and do not regard it as a serious offense if they can "get by."

Again thanking you for your kind offer, I am

Yours very truly,

WILLIAM MAHONEY

WM:HA

Liquor Control Commissioner

Two Orators

Among the important visiting personages who will come to Saint Paul for the 84th Annual Meeting of the Minnesota State Medical Association are the president of the Pennsylvania State Medical Society, Dr. Maxwell John Lick,



DR. MAXWELL J. LICK



REV. ALPHONSE SCHWITALLA

and the Dean of Medicine of St. Louis University and president of the Catholic Hospital Association, Rev. Alphonse M. Schwitalla, S.J.

These two men are famous orators, the one a distinguished surgeon besides, and the other a distinguished educator and administrator and they are new to Minnesota audiences.

Both are among the ablest defenders in America of the freedom and high traditions of the professions.

Of Dr. Lick the *Journal* of his own state society said upon his recent election to the presidency:

"The election of Dr. Lick to the presidency of The Medical Society of the State of Pennsylvania is a merited reward from his medical confreres. The confidence reposed in him pays tribute to his genial and dynamic personality. It further recognizes his superior surgical attainments and judgment. This recognition is augmented by his studious approach and clear perception of the diverse ramifications of medical economics. He fully realizes the needs of the profession and has the gifted persuasion necessary to the important office which he occupies. Dr. Lick is a thinker and analyst who ponders deeply before acting, a man of high caliber, a *born orator* with a convincing, lovable personality"

Father Schwitalla has been heard upon many platforms in all parts of the United States and in the *Catholic Hospital Review* of which he is editor. Many who attend the May meeting in Saint Paul will have heard him before and they

will want to hear him again. The others may look forward to a memorable first experience at Saint Paul.

Proper Consultation

(Monthly Editorial by the Medico-Legal Advisory Committee)

Investigations by the Medico-Legal Advisory Committee of many malpractice cases show that improperly conducted consultations are the basis for their beginning. If the rules which follow are carefully noted and conformed to, many a misunderstanding will be eliminated between the physicians concerned, and a sense of renewed confidence between the patient and attending physician will be engendered. The confidential patient-physician relationship will still be maintained.

1. Consultations should be encouraged in all long continued or serious cases. Unnecessary ones should be discouraged. At all times the patient's benefit should be the first consideration.

2. After the consultant has made his examination, he should discuss his findings with the attending physician alone and when agreement has been reached, the patient or his family should be told of the findings agreed upon between them by the family physician in the presence of the consultant. If no agreement is reached the family should be so informed and the reasons for such disagreement discussed. The consultant should then withdraw at once.

3. Only when agreed to by the physician in charge should the consultant take over the care and conduct of the case in the same illness.

4. All cases referred to another should be accompanied by a written history of the case and courtesy between medical men should require the consultant to advise the referring man in writing of his findings. The records of each will then be complete.

5. Consultants should demand and receive their fees immediately upon the completion of the consultation.

The best consultant is one who gives of his experience whole-heartedly to the help of his colleague. Shun the one who glories in an egotistical attitude of superiority.

President's Message

The recent meeting of officers of the County Medical Societies was well attended. Numerous problems were discussed, the chief of which were county organization, and the value of maintaining a full membership and programs for the education of lay groups on medical subjects of immunization, cancer, syphilis, et cetera. The numerous committees assigned to the various medical problems have arranged to supply speakers through the speakers' bureau for local medical meetings, and with the aid of the Minnesota Public Health Association, to supply speakers for community health meetings. In view of the misinformation distributed by advertising concerns it behooves us to arouse our county organizations concerning the education of lay groups. Since physicians and their wives belong to all of the local societies and clubs, it appears only reasonable that a medical subject arranged for a lay group should be included in the year's activity of each organization. Civilization cannot be maintained or progress made without the aid of scientific medicine.

A. W. ADSON, M.D.

Minnesota State Board of Medical Examiners

Minneapolis Woman Pleads Guilty To Abortion

Re: State of Minnesota vs. Mary Lovold, also known as Mary Gaslin.

On Tuesday, February 2, 1937, the Honorable Levi M. Hall, Judge of the District Court at Minneapolis, sentenced Mary Lovold, also known as Mary Gaslin, seventy-one years of age, to a term of not to exceed four years in the Woman's Reformatory at Shakopee. The defendant had pleaded guilty on December 31, 1936, to an information charging her with the crime of abortion.

Mrs. Lovold, who claims to have been a midwife for the past forty years, performed an abortion on a twenty-eight year old Minneapolis girl, who formerly resided at Princeton, Minnesota. The abortion was performed on September 3, 1936, for the sum of \$29.00. The patient became ill and was taken to the Minneapolis General Hospital where she has been confined ever since. She is suffering from abscesses and is physically unable to receive the necessary medical and surgical attention.

Mrs. Lovold, who resides at 823 Eighth Avenue South, Minneapolis, is suffering from cancer, and because of her age and physical condition, Judge Hall suspended her sentence and placed her in the custody of the Probation officer for Hennepin County. Judge Hall told Mrs. Lovold that she was not telling the truth to the Court when she stated this was the only abortion that she had performed. Judge Hall also advised her that if any further complaints came in reference to her, she would go to Shakopee irrespective of her age or physical condition. He called her son, Joseph Gaslin, to the bench and told him that if he wanted to keep his mother out of Shakopee he would have to take care of her and see to it that she stayed out of this type of work. Mrs. Lovold has no license to practice any form of healing whatever.

Treatment For The Needy

A new county by county survey of methods of handling medical care for the indigent in Minnesota shows no great change over the situation in 1936.

Medical care for the indigent in the eighty-four rural counties is paid for on a fee basis in forty-eight out of the eighty-four counties. Of these forty-eight, six achieved this desirable status during the past year. But five others which had been on a fee basis previously have been re-organized on the undesirable county physician basis.

The reason for the change back to the county physician system is known, in one case, to have been laid to the door of the physicians: They were considered by county officials to have taken advantage of their privileges.

The future status of welfare and relief work of all types in Minnesota will, of course, hinge considerably upon the outcome of public welfare legislation now before the legislature.

List of Physicians Licensed by the Minnesota State Board of Medical Examiners on February 6, 1937

(January Examination)

- Aanes, Almer Russell, U. of Minn., M.B. 1936, Minneapolis, Minn.
- Adams, Richard Charles, Queens U., M.D. 1931, Rochester, Minn.
- Allen, Herbert Benjamin, U. of Minn., M.B. 1936, Minneapolis, Minn.
- Anderson, Wallace Everett, U. of Minn., M.B. 1933, M.D. 1934, St. Paul, Minn.
- Autry, Daniel Hill, U. of Ark., M.D. 1934, Rochester, Minn.
- Benson, Kenelm Winslow, U. of Pa., M.D. 1934, Rochester, Minn.
- Benton, Paul C., U. of Minn., M.B. 1936, Minneapolis, Minn.
- Berman, Lawrence, U. of Minn., M.B. 1936, Minneapolis, Minn.
- Brown, Milton G., U. of Minn., M.B. 1926, M.D. 1927, St. Paul, Minn.
- Brussell, Albert Sinai, U. of Minn., M.B. 1933, M.D. 1936, Rochester, Minn.
- Bushard, Wilfred Joseph, U. of Minn., M.B. 1936, Minneapolis, Minn.

Butler, Raleigh Virgil, U. of Minn., M.B. 1936, Minneapolis, Minn.

Chermak, Francis Gordon, U. of Minn., M.B. 1936, Minneapolis, Minn.

Cowan, George Morterud, U. of Minn., M.B. 1936, Duluth, Minn.

Davies, Benjamin Paul, U. of Kans., M.D. 1931, Minneapolis, Minn.

Dearing, William H., Jr., U. of Pa., M.D. 1934, Rochester, Minn.

Deters, Donald Cummings, U. of Minn., M.B. 1936, Des Moines, Ia.

Enroth, Oscar Ernest, U. of Minn., M.B. 1936, St. Paul, Minn.

Ershler, Irving, Geo. Wash. U., M.D. 1931, Minneapolis, Minn.

Frank, Leonard Charles, U. of Minn., M.B. 1936, Minneapolis, Minn.

Friedell, George, U. of Minn., M.B. 1936, St. Paul, Minn.

Gorenflo, Leila Ann, Rush Med. Col., M.D. 1935, Cass Lake, Minn.

Gregg, Robert Ober, Syracuse U., M.D. 1934, Rochester, Minn.

Hall, Harry Benjamin, U. of Minn., M.B. 1935, M.D. 1936, Minneapolis, Minn.

Hammerstad, Lynn M., U. of Minn., M.B. 1935, Heron Lake, Minn.

Hendrick, John Alexander, Jr., Tulane U., M.D. 1935, Rochester, Minn.

Hertz, Charles Schaeffer, U. of Pa., M.D. 1934, Rochester, Minn.

Jensen, Russell Maben, Northwestern U., M.B. 1935, M.D. 1936, Rochester, Minn.

Kern, Maximilian Christian, Creighton U., M.D. 1936, St. Paul, Minn.

Kooiker, Clarence, U. of Minn., M.B. 1936, Minneapolis, Minn.

Lloyd, Samuel Joseph, Johns Hopkins, M.D. 1934, Rochester, Minn.

Lovelace, William Randolph, Harvard U., M.D. 1934, Rochester, Minn.

Matthews, Morgan Whitsitt, Tulane U., M.D. 1927, Rochester, Minn.

Mecray, Paul Mulford, Jr., U. of Pa., M.D. 1934, Rochester, Minn.

Moore, Ferrall Harmon, U. of Neb., M.D. 1932, Rochester, Minn.

Mundell, Benjamin James, Georgetown U., M.D. 1934, Rochester, Minn.

Noran, Harold H., U. of Minn., M.B. 1936, Minneapolis, Minn.

Ransom, H. Robert, U. of Minn., M.B. 1936, Minneapolis, Minn.

Rasmussen, Theodore Brown, U. of Minn., M.B. 1934, M.D. 1935, Rochester, Minn.

Reed, Paul, U. of Minn., M.B. 1936, Minneapolis, Minn.

Regan, James Francis, U. of Chicago, M.D. 1934, Rochester, Minn.

Richardson, Frank Lloyd, U. of Minn., M.B. 1936, Minneapolis, Minn.

Sawyer, Malcolm Herbert, Northwestern U., M.B. 1935, M.D. 1936, Rochester, Minn.

Seitz, Sherwood Bretz, Northwestern U., M.B. 1935, M.D. 1936, Minneapolis, Minn.

Seljeskog, Sigsbee R., U. of Minn., M.B. 1936, M.D. 1936, Minneapolis, Minn.

Shandorf, James Frederick, U. of Minn., M.B. 1936, Minneapolis, Minn.

Smith, Frederick Abbott, U. of Minn., M.B. 1936, Minneapolis, Minn.

Snyder, John Mendenhall, U. of Pa., M.D. 1934, Rochester, Minn.

Spittler, Russell O., U. of Minn., M.B. 1932, M.D. 1936, Minneapolis, Minn.

Stanford, Charles Edward, U. of Wisconsin, M.D. 1934, Minneapolis, Minn.

Swingle, Hugh Franklin, Jr., Duke U., M.D. 1936, Rochester, Minn.

Thysell, Desmond Milton, U. of Minn., M.B. 1936, Minneapolis, Minn.

Varco, Richard Lynn, U. of Minn., M.B. 1936, Minneapolis, Minn.

Wood, George Howard, U. of Cincinnati, M.B. 1936, M.D. 1935, Rochester, Minn.

Wrook, Donald Holly, Northwestern U., M.B. 1936, M.D. 1935, Rochester, Minn.

By Reciprocity

Miller, Joseph Matthew, Columbia U., M.D. 1936, Rochester, Minn.

Plowman, Elven Theodore, U. of Iowa, M.D. 1936, Marble, Minn.

National Board Credentials

Smith, Stanley Joseph, Northwestern U., M.D. 1936, Eveleth, Minn.

Short Courses at Columbia

Postgraduate training may be obtained by general practitioners through the short courses offered in the Graduate School of the College of Physicians and Surgeons at Columbia University. Advanced courses for specialists are offered to enable specialists to meet the requirements of one of the national boards for the certification of specialists. In 1932 provision was made for the granting of the degree of Doctor of Medical Science (Med. Sc.D.) for residents at affiliated hospitals who spend part of their residency in the medical sciences, write an acceptable thesis and pass an examination. Credit is given those who have pursued graduate work in medical sciences or in a hospital residence recognized by the University.

Question Courts

A number of question courts will feature the program of the Annual Meeting. Members who have questions that they would like answered at any of these panels should send them into the Secretary's office before April 24.

The following panels are scheduled:

Question Council on Obstetrics—Monday, 9:15 a. m.

Medical Question Court—Monday, 2:30 p. m.
Peptic Ulcer Question Court (Part of Joint Symposium on Peptic Ulcer)—Monday, 4 p. m.

Surgical Question Court—Tuesday, 4:45 p. m.
Industrial Panel—Wednesday, 3 p. m.

In Memoriam

William Myron Cory

1858-1937

William M. Cory was born at Greenup, Illinois, February 19, 1858, and died at his home in Waterville, Minnesota, February 5, 1937, at the age of seventy-eight.

Dr. Cory's father was State Superintendent of Schools in Illinois before the Civil War. He enlisted with the Union forces in the Civil War and died in service, leaving a widow and one son, William Myron Cory.

Dr. Cory received his early education in the country schools of Illinois, supplemented by his father's splendid library. He took his preparatory medical training at Brownington, Missouri, after which he was affiliated with other physicians and then began practice. In 1885 he attended the King Medical College at Des Moines for two years and was the first one in charge of the Mercy Hospital, Des Moines. He later became associated with the Case Samaritan Home at Waterville, Minnesota, where he remained eight years.

On July 6, 1896, Dr. Cory married Lydia S. Bluhm of Waterville, who survives him.

In 1898 and 1899 Dr. Cory spent two years at the College of Physicians and Surgeons at Keokuk, Iowa, and in 1900 he opened an office at Waterville, where he continued to practice until three years ago, when he retired.

Dr. Cory had been a member of the Board of Health, was mayor of Waterville two terms and was very active in political, religious and social affairs in Waterville. He was a member of the Baptist church and did splendid work with the young people in the church. He was an Odd Fellow and Mason. He organized an orchestra and at one time was a member of the local band. Dr. Cory for many years served the community of Waterville with unselfishness and energy and he will be sadly missed by his many patients and friends.

William M. Dummer

1887-1937

William M. Dummer, Fairfax, Minnesota, was born July 21, 1887, in West Newton township, Minnesota. His death occurred on February 2, 1937, at Rochester, Minnesota, where he had been under treatment for high blood pressure for several weeks.

Dr. Dummer attended high school at New Ulm and received his medical education at Northwestern University, where he graduated in 1918.

The year of his graduation Dr. Dummer married Stella Waltzer of St. George, and began practice in Farmington. In 1923 he moved to Fairfax and practiced there continuously until the time of his last illness.

Dr. Dummer was a devout Catholic and a prominent

member of the Knights of Columbus. He was also president of the Lions Club at the time of his death. He was a member of the Renville County Medical Society, the Minnesota State Medical Association and the American Medical Association.

Dr. Dummer is survived by his widow; six brothers, George and John Dummer of New Ulm, Edward, Harry and Robert Dummer of West Newton, and Albert Dummer of Minneapolis; three sisters, Mrs. Alfred Altman and Mrs. John Zitzmann of West Newton and Mrs. Guy Merkle of Ridgely; and eight children, Jerome, Stanley, Robert, Donald, Adeline, Ralph, Margery and Thomas.

Andrew Olans Flom

1886-1936

Dr. A. O. Flom, Chisago City, was born in 1886. He received his medical education at the University of Minnesota, where he graduated in 1912. He practiced at Chisago City, but was not a member of the State Medical Association. His death was caused by a heart attack which occurred on October 29, 1936, while he was hunting near his home.

Eugene Kibby Green

Dr. Eugene K. Green, of Minneapolis, died January 22, 1937, in Pasadena, California, after an illness which began about a year ago. He was born in Minneapolis and a graduate of the University of Minnesota School of Medicine, in the class of 1903. Dr. Green was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, the Minneapolis Surgical Society, the American College of Surgeons, and was on the medical faculty of the University of Minnesota Medical School. He was for many years an owner and chairman of the Board of Directors of Hill Crest Hospital, now known as Franklin Hospital.

Dr. Green took an active interest in the medical organizations of which he was a member, was a past president of the Hennepin County Medical Society, and at the time of his death represented that Society in the House of Delegates of the Minnesota State Medical Association. He retired from active practice about a year ago.

In his personal character, Dr. Green was conscientious to a fault and could be relied upon to carry out, to the best of his ability, anything that he undertook. His avocation was his garden, and he prided himself on having the earliest radishes, the finest corn, and the most perfect dahlias to be found in the neighborhood.

As a surgeon he was safe, sane and conservative, but ready to accept new methods after they had been thoroughly tested. He was not quick to operate, took no "snap judgments," and arrived at his decisions only after deliberate consideration of all the facts.

Dr. Green is survived by his wife and two daughters, Murrell Green and Mrs. C. W. Moberg of Lake Park, Minn.

OF GENERAL INTEREST

Dr. Leo R. Prins, formerly of Saint Paul, is now located in Albert Lea, where he is a member of the staff of the Surgical and Medical Clinic.

* * *

Dr. F. E. Harrington, health commissioner of Minneapolis, recently received the renewal of his commission as a senior surgeon of the U. S. Public Health Service.

* * *

Dr. H. W. Arndt, physician and surgeon in Frazee, Minnesota, since 1920, opened offices March 1 in Detroit Lakes, where he will continue the practice of general medicine.

* * *

Dr. Harold Richardson, for a number of years associated with the Saint Paul Clinic, has opened offices at 1154 Lowry Medical Arts Building, Saint Paul, for the practice of internal medicine.

* * *

Dr. Charles W. Rucker, who has been practicing ophthalmology in Minneapolis, has become a member of the permanent staff of the Mayo Clinic at Rochester in the Department of Ophthalmology.

* * *

Dr. Wallace H. Cole of Saint Paul is acting as chairman of a committee organized to recommend methods of using the proceeds of the President's Birthday Ball held in Saint Paul, January 30.

* * *

"The Art of Relaxation" was the subject of an address by Dr. Norman P. Johnson of Minneapolis given at the weekly health forum in the Minneapolis Public Library, the first week in February.

* * *

Dr. C. E. Persons of Marshall recently celebrated his ninetieth birthday anniversary. He located in Marshall for the practice of medicine in 1877 and has been in active practice there for nearly fifty years.

* * *

The Minnesota Pathological Society was addressed on January 19, by Dr. E. A. Boyden on the subject, "The Reaction of the Gallbladder to Extrabiliary Lesions," and by Dr. E. T. Bell on the subject, "The Pathology of Clinical Acute Nephritis."

* * *

Dr. H. R. Tregilgas of South Saint Paul has recently been appointed local physician for the Chicago Great Western and the Chicago, Rock Island and Pacific Railways. He succeeds the late Dr. J. E. Campbell as medical representative of the two companies.

* * *

Dr. Allen Hemingway, Assistant Professor of Physiological Chemistry at the University of Minnesota, is spending a year at the Yale University Medical School, having received the Stirling Research fellowship at that institution.

* * *

Dr. and Mrs. H. A. Miller of Fairmont recently re-

turned from a vacation tour to Mexico City, where they spent much of their time in inspection of ancient Aztec Indian civilization, as evidenced in the surrounding territory.

* * *

Dr. A. O. Swenson of Duluth has been nominated as a candidate for Hall of Fame honors with the American Legion in connection with his work with the Boys' Y. M. C. A. activities and prominence in educational and youth enterprises.

* * *

Dr. Myron O. Henry of Minneapolis was recently made a member of the Chicago Orthopedic Society. At the February meeting, which was a joint meeting of the Chicago Orthopedic Society and Chicago Roentgen Society, he read his inaugural thesis on "Chip Graft in Orthopedic Surgery."

* * *

Dr. Gilbert J. Thomas, 1009 Nicollet Avenue, has been elected to membership in the Clinical Society of Genito-Urinary Surgeons, and to the International Urological Association. When the latter organization meets in New York, in 1938, Dr. Thomas will present a paper on genito-urinary tuberculosis.

* * *

Dr. J. C. Michael, Minneapolis, has just been elected to membership on the National Committee on Mental Hygiene. It is the policy of this committee to honor and bestow recognition for contributions to the advancement in mental hygiene by specialists in psychiatry, mental hygiene and related fields.

* * *

Dr. George W. Snyder, director of the Hygienic Bureau of the Saint Paul public schools, has been appointed a member of the National Child Welfare Committee of the 40 and 8. This appointment follows citation of Dr. Snyder by the same organization a year ago for having done the most outstanding work of any 40 and 8 member in child welfare.

Notice

Members who are willing to give papers before county or district society medical meetings, will please send title and short description of any subjects they wish to give to the state office. Lists of subjects and speakers are being prepared in order to aid county program chairmen to arrange more interesting programs during the year. If you know of any members who are capable of giving interesting talks, but who have not sent in their names, please let us know.

Committee on Hospitals and Medical Education

L. F. HAWKINSON, Brainerd, Chairman.

Dr. F. J. Brabec of Perham, Minnesota, has announced that he will retire from the active practice of medicine and hereafter will confine his medical activities to consultation services only. Dr. Brabec has practiced in Perham since 1893. Prior to locating in Perham, he served at Asbury Hospital, Minneapolis, and St. Joseph's Hospital, Saint Paul.

* * *

Dr. Herbert Evans, Professor of Anatomy at the University of California, will present two evening lectures on the subject of "Vitamines," April 20 and 21. The first will be under the sponsorship of the Minnesota Pathological Society; the second is being provided by the C. M. Jackson lectureship established by the Phi Beta Pi medical fraternity.

* * *

The annual E. Starr Judd Lectureship at the University of Minnesota was given on February 3 by Dr. Everts A. Graham, Professor of Surgery at Washington University, on the subject, "Accomplishments of Thoracic Surgery and Its Present Problems." Dr. Graham also addressed the Minneapolis Surgical Society February 4 on "Biliary Tract Disease."

* * *

Dr. M. J. Lindahl of Jasper has moved to Pipestone where he has opened offices in the Davies-Pearson building. Dr. Lindahl is a graduate of the University of Minnesota, 1927, and served his internship and one year's residency at Ancker Hospital, Saint Paul. He practiced in Winthrop for five years before locating in Jasper, where he has been located for the past three and one-half years.

* * *

The marriage of Miss Katherine Ethel Lemon, daughter of Dr. and Mrs. Willis S. Lemon of Rochester, Minnesota, and Dr. George Alexander Lord, a fellow in the Mayo Foundation, son of Mr. and Mrs. Edward Lord of Glen Ridge, N. J., was solemnized February 17, 1937, at the home of the bride's parents. Dr. and Mrs. Lord are on a cruise to Guatemala and will be at home in Rochester after April 1.

* * *

Dr. H. P. Johnson of Fairmont, Minnesota, who celebrated his eighty-second birthday on February 3, 1937, after fifty-eight years in medical practice continues to serve his community in the capacity of physician in association with his son, Dr. Donald Johnson. As practicing medicine has been Dr. Johnson's chief interest in life, he states that he has no desire to retire. His practice has been largely obstetrical and it is a matter of pride to Dr. Johnson that he has ushered nearly 3,000 babies into the world.

* * *

A special program of lectures and demonstrations in surgery and medicine will be held under the direction of The Mayo Foundation from April 5 to 9, inclusive. Mornings will be devoted to surgical and medical clinics. In the afternoons and evenings, in addition to clinico-pathologic conferences, symposiums will be conducted on urology, cardiology, gastro-enterology, dermatology, endocrinology, diseases of the colon and rectum, orthopedics and arthritis. Visiting physicians will be welcome guests.

HOSPITAL NEWS

Dr. James B. Carey was elected president of the Eitel Hospital staff at the annual meeting held late in January. Dr. William B. Roberts was named vice president and Dr. Frank B. Hirschfield, secretary.

* * *

Dr. Don S. Fitzgerald has been named chairman of the St. Barnabas Hospital staff. Other officers are Dr. Julius Johnson, vice chairman; Dr. H. B. Diessner, secretary-treasurer, and Dr. J. M. Renyolds, member of the executive committee.

* * *

The Nagel Hospital was opened in Waconia, Minnesota, the first week in February, with Dr. H. D. Nagel, chief of staff. The hospital has room for ten beds, is equipped with a modern operating room and a kitchen. There had been no hospital facilities in Waconia prior to the establishment of the Nagel Hospital.

* * *

Dr. Leo M. Maguire, a medical officer with the Veterans' Bureau since 1922, has been appointed chief medical officer in charge of the Fort Snelling Veterans' Hospital. He succeeds Dr. W. A. Colton, who has been transferred to Hampton, Virginia. In honor of Dr. and Mrs. Colton a farewell tea was given February 7, by the nurses of the hospital at the nurses' home.

* * *

Dr. C. W. More of Eveleth has announced that Dr. Stanley J. Smith of Chicago has become associated with the More Hospital and will fill the vacancy left in the staff by the resignation of Dr. E. N. Peterson. Dr. Smith has been on the faculty staff of the School of Medicine at Loyola University for the past five years as clinical instructor in gross anatomy and has also taught operative surgery in the same institution for the past three years.

* * *

Dr. M. H. Tibbets was elected chief of staff of St. Luke's Hospital, Duluth, at the annual staff meeting held in January. He succeeds Dr. D. W. Wheeler. Other staff officers include Dr. C. H. Schroder, vice chief of staff; Dr. C. I. Krantz, secretary; Dr. T. O. Young, surgery; Dr. C. M. Smith, medicine; Dr. A. L. McDonald, obstetrics; Dr. L. E. Doolittle, pediatrics; Dr. A. C. Hilding, eye, ear, nose and throat; Dr. Wheeler, x-ray, and Dr. A. G. Athens, pathological laboratory.

Retiring department heads included Dr. Krantz, medicine; Dr. W. R. Bagley, surgery; Dr. T. L. Tilderquist, eye, ear, nose and throat; Dr. F. H. Magney, obstetrics; Dr. Schroder, pediatrics; Dr. S. H. Boyer, Sr., pathology, and Dr. Gage Clement, radiology.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

Medical Broadcast for March

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 2:30 o'clock every Thursday afternoon over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

March 4—Parents and Children.

March 11—Dementia Præcox.

March 18—Pneumonia.

March 25—Periodontia.

International Conference on Fever Therapy

In conjunction with the International Conference on Fever Therapy to be held at the Waldorf-Astoria Hotel on March 29, 30, and 31, 1937, there will be a scientific and commercial exhibit staged.

The clinics will be held at the College of Physicians and Surgeons, Columbia University, New York City.

A large attendance of fever therapists from all over the world is expected. A very interesting and instructive program has been arranged and all of those who plan to attend the conference are urged to register promptly with the general Secretary, Dr. William Bierman, 471 Park Avenue, New York City. The registration fee is \$15.00.

State Meeting

The Great Northern Railroad Surgeons have designated the third day of the 84th Annual Meeting of the Minnesota State Medical Association, to be held May 3, 4 and 5 in the Saint Paul Auditorium, as the annual meeting of their own Association.

This decision was reached after inspection of the distinguished program for the day, which is to be devoted exclusively to industrial medicine and surgery under the auspices of the Northwest Industrial Medical Conference. The decision of the surgeons' association will bring an additional large group of surgeons and specialists to Saint Paul for the state meeting. The surgeons will have their own annual dinner Wednesday evening, following the close of the state meeting.

The Northwest Conference will open Tuesday night with an Industrial Dinner at which the Industrial Commission of Minnesota will be invited guests. Hon. Voyta Wrabetz, Madison, chairman of the Industrial Commission of Wisconsin, will be principal speaker.

The program will continue throughout Wednesday. Out-of-state speakers will include Dr. Maxwell J.

Lick of Erie, Pennsylvania, who will speak on "Differential Diagnosis in Acute Abdominal Injuries," and Dr. Michael L. Mason, Chicago, whose subject will be "Hand Infections." Other topics to be discussed during the day, pertaining especially to industrial medicine, will be: back injuries, neglected head injuries, fracture dislocation of the shoulder, hand and wrist injuries, hand infections, os calcis injuries, injuries to the thigh, changes in the type of fractures due to changes in the type of construction of automobiles, treatment of burns, internal derangement of knee joint, physiotherapy, and peripheral nerve injuries.

Throughout the first two days of the meeting, a continuous scientific program will be conducted in two sections, medical and surgical, with both sections uniting for addresses by out-of-state speakers. Morning sessions will open with clinics, and considerable time each day will be devoted to papers by members of the Association. Both sections will have question courts and there will be a joint symposium on peptic ulcer.

On Monday, also, a Congress of Allied Professions has been arranged to discuss social and economic problems of all the professions connected with the art of healing. Representatives of the various professions will be on the program, as well as representatives from Washington, to discuss the Social Security program and other problems related to the professions.

Another important novelty scheduled for the meeting is the Public Health meeting to be conducted Tuesday evening. Speakers for this meeting will include Rev. Alphonse M. Schwitalla, S.J., St. Louis, president of the Catholic Hospital Association; Dr. N. B. VanEtten, New York City, speaker of the House of Delegates, American Medical Association; Dr. Morris Fishbein, Chicago, editor of the *Journal of the American Medical Association*, and Dr. R. A. Vonderlehr, Washington, D. C., Assistant Surgeon General.

Cancer Exhibit

Diagnosis of frozen sections will be made in the exhibit hall each day from specimens of malignancies sent in by physicians. This service is to be a part of an extensive cancer exhibit at the meeting.

These sections will be shown under the microscope thrown on the screen with a micro-projector and discussed by members of the Committee on Cancer of the State Association, which will put on the exhibit with the coöperation of the American Society for the Control of Cancer.

Physicians having specimens which they wish to have included in the demonstration at the meeting should inform the Secretary's office in advance so that an appointment for the demonstration will be made.

A new film on the growth of cancer cells will be shown during demonstration hours and the exhibit will also include important charts, pictures and other materials.

Another outstanding exhibit will be that on syphilis in charge of Dr. L. A. Brunsting, Rochester, and Dr. P. A. O'Leary, Rochester, a member of the newly appointed committee of the State Association on syphilis and social diseases. Dr. S. E. Sweitzer, Minneapolis is chairman of the committee, which includes Dr.

O'Leary; Dr. F. E. Harrington, Minneapolis; Dr. W. E. Hatch, Duluth; Dr. F. W. Lynch, Saint Paul; Dr. H. E. Michelson, Minneapolis; Dr. J. F. Madden, Saint Paul; Dr. H. G. Irvine, Minneapolis.

Postgraduate education in the diagnosis, control and treatment of venereal diseases is especially important in view of the nation-wide campaign of the Surgeon General, Dr. Thomas Parran. The Assistant Surgeon General, Dr. R. A. Vonderlehr, syphilologist of the United States Public Health Service, will be present at the meeting to talk on this subject.

A film for physicians, now being prepared by Dr. Vonderlehr in collaboration with other specialists in the field under the auspices of the American Medical Association, will be shown in connection with the exhibit if it is completed in time.

The exhibit section for which Minnesota meetings are noted will be even more extensive than in past years with an hour of program time each morning and afternoon to be devoted to inspection of exhibits and scientific demonstrations.

Another exhibit of special interest will be that on comparative anatomy under the direction of Dr. Clarence M. Jackson, head of the Department of Anatomy, University of Minnesota. In conjunction with this exhibit, the skull of Minnesota's prehistoric girl, inhabitant of the Pleistocene Age, discovered by Dr. A. E. Jenks, University Professor of Anthropology, will be displayed.

Among other exhibitors of note will be the United States Public Health Service, the University of Minnesota, the Mayo Clinic, the American Medical Association, and the United States Army Medical Corps.

Individual members of the Association also will provide several interesting exhibits, including: endocrine studies, hand infections, ophthalmology and otolaryngology, physical therapy, tuberculosis of the hip. In addition many state organizations will provide exhibits.

Minnesota Academy of Ophthalmology and Otolaryngology

The Minnesota Academy of Ophthalmology and Otolaryngology held its regular monthly meeting Tuesday, February 9, at the Minneapolis Club. The following program was given:

Pathology of Petrositis—PROFESSOR F. R. NAGER, Professor of Otolaryngology, University of Zurich.
Tuberculosis of the Anterior Uvea—DR. C. S. O'BRIEN, Professor of Ophthalmology and Chief of the Department of Ophthalmology, University of Iowa.

Kandiyohi-Swift County Society

The Kandiyohi-Swift-Meeker County Medical Society held its February meeting on the tenth, at the Lakeland Hotel, Willmar, at 6:30 P. M. Dr. L. F. Hawkinson of Brainerd presented a paper on "Everyday Endocrinology for the General Practitioner, with Newer Developments of the Past Two Years." The revised

constitution and by-laws of the State Medical Association were discussed at this meeting.

Washington County Society

The Washington County Medical Society held its regular monthly meeting, Tuesday, February 9.

After discussing a number of questions of present interest in the way of care of the indigent, et cetera, the guest speaker, M. W. Wheeler, M.D., was given the floor. He gave a very interesting and instructive talk on "Acute and Chronic Sinus Involvement," giving causes and treatment. This was a particularly timely subject in view of the mild epidemic of influenza in the district. Dr. Wheeler believed and stated that no case of influenza—no matter how mild—exists without some sinus involvement. He further went into the remote effects of sinus inflammations and reported many interesting cases.

E. S. BOLEYN, M.D., *Secretary.*

ACUTE VASOSPASTIC HYPERTENSION

(Continued from Page 182)

cate that the disease was primarily attributable to glomerular nephritis.

3. There is reason to believe that there is a relation between infection and acute vasospastic hypertensive disease in some cases.

4. It is probable that tonsillar infection played an etiologic part in the case reported.

5. In the treatment of hypertension, rest, relaxation, sedation, and possibly surgical operation, are to be considered. Diet plays little or no part in the treatment.

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Alcoholic Death Rate Unchanged from 1935

The alcoholism death rate in 1936 was identical with that for 1935, namely 2.1 per 100,000. This rate is the lowest recorded for this disease since 1921.—*Statistical Bulletin*, Metropolitan Life Insurance Co., January, 1937.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

Books Received for Review

ENDOCRINOLOGY. Clinical Application and Treatment. August A. Werner, M.D., F.A.C.P. Assistant Professor Internal Medicine St. Louis University School of Medicine, Associate Physician St. Mary's Group of Hospitals, etc. 672 pages. Illus. Price, cloth, \$8.50. Philadelphia: Lea & Febiger, 1937.

MEDICAL MORALS AND MANNERS. Hubert Ashley Royster, M.D. 333 pages. Price, cloth, \$2.50. Chapel Hill, N. Car.: University of North Carolina Press, 1937.

HANDBOOK OF AMBULANT PROCTOLOGY. Charles Eton Blanchard, M.D. 304 pages. Illus. Price, cloth, \$5.00. Youngstown, O.: Medical Success Press, 1937.

ANNUAL REPORT, INTERNATIONAL HEALTH DIVISION, ROCKEFELLER FOUNDATION. 286 pages. Illus. 49 West 49th Street, New York. 1935.

THE MANAGEMENT OF OBSTETRIC DIFFICULTIES. Paul Titus, M.D., Obstetrician and Gynecologist to the St. Margaret Memorial Hospital, Pittsburgh. Consulting Obstetrician and Gynecologist to the Pittsburgh City Homes and Hospital, Mayview, and the Homestead Hospital, Homestead, Pa.; Secretary of the American Board of Obstetrics and Gynecology. 879 pages. Illus. Price \$8.50. St. Louis: C. V. Mosby Co., 1937.

This is indeed a most valuable work dealing mostly with the diagnosis and treatment of abnormal conditions. Each subject is covered in a concise yet thorough manner and in accord with the author's individual convictions.

The generally conception and construction of the work is splendid, the exposition clear and logical and the illustrations are profuse and well chosen in point of importance and helpfulness and leave nothing to be desired in their composition and execution. Every subject is brought down to include the latest accepted work in treatment and technique. A valuable introduction sets a standard of excellence that is maintained in every chapter.

It is one of the few books that I would urge everyone practicing obstetrics to study from cover to cover; and I venture to predict that it will take a prominent place among obstetric classics.

R. T. LAVAKE, M.D.

CLASSIFIED ADVERTISING

PRACTICE FOR SALE—Prosperous farming community. Completely equipped office—x-ray, fluoroscope, basal metabolism, diathermy, infra-red, ultra-violet, etc. Taking fellowship. Will sell on terms. C. P. Truog, M.D., Lindstrom, Minn.

WANTED—Assistant to physician in general practice in small town. Give full personal and professional qualifications in letter. Address D-355, care MINNESOTA MEDICINE.

PHYSICIAN WANTED—On account of age, I am planning on retiring from a good unopposed village practice, with large surrounding territory. Some office equipment to dispose of, only if incoming physician wants and needs it; outside of this nothing to sell. Good will to the right man. Address D-351, care MINNESOTA MEDICINE.

ATTENTION—Man experienced in medical account and credit handling and in drug supply purchasing wishes position as business manager, or assistant, with Twin Cities hospital, institution, clinic or group. Address D-354, care MINNESOTA MEDICINE.

MINNESOTA PRACTICE FOR SALE—Long established in prosperous farming community, with many advantages. Specializing. Only some equipment to buy. Address D-352, care MINNESOTA MEDICINE.

WANTED—Eye, ear, nose and throat specialist for small well-established group in Dakota. Salary to begin. Better arrangements later, if satisfactory. Young man preferred. Address D-353, care MINNESOTA MEDICINE.

FOR SALE—Bausch & Lomb microscope. Diathermy made by High Tension Transformer Equipment Co., Type F 3-2; Serial No. 3664. Reasonable. Address Mrs. D. S. Fleischhauer, Wabasha, Minn.

POSITION WANTED—An assistant in doctor's office. Experienced. Excellent references. Address D-356, care MINNESOTA MEDICINE.

YOUNG LADY wishes work in doctor's or dentist's office. One year hospital experience, also office training. Saint Paul preferred. Address D-357, care MINNESOTA MEDICINE.

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society.

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THE DOCTOR AND TUBERCULOSIS OF THE FUTURE*

H. E. KLEINSCHMIDT, M.D.

Medical Director, National Tuberculosis Association
New York City

I WISH briefly to outline first, what the future course of the tuberculosis problem may be, and second, what particular part the general practitioner, adjusting himself to the pressures of the times, may expect to play in the last act of the age-old drama of tuberculosis.

I

Between Hippocrates' classic description of phthisis, the wasting disease, and our present-day conception of tuberculosis, is a long and rocky road. Heartbreaking disappointments litter this road but it is marked also by vivid milestones of progress on which we read the names of Laennec, Koch, Trudeau, Pirquet, Forlanini and others. Some thirty years ago a handful of courageous men decided that the time had come to marshal the meager medical resources of their day against tuberculosis. Since then progress has been on the march. The people have been aroused, hundreds of sanatoria dot the land, diagnostic facilities are everywhere and control machinery is in operation. Meantime reënforcements in the form of new discoveries and technical refinements have been added. At last man has the whiphand, and the sheer hopelessness that once clouded the problem of tuberculosis has given way to a spirit of aggressive confidence.

For each four deaths from tuberculosis in 1900 there was approximately one in 1935. The morbidity has apparently declined in like ratio, and, if we may rely upon straws in the wind, even the infection rate has declined markedly. There are still sectors of the tuberculosis front that puzzle and evade us, but the fact that we now break up our problem into component parts

and that instead of the older shotgun method we are today aiming rifle fire at target points of the enemy, is an indication that we are closing in on him.

We are so well along that certain leaders in public health believe that the tuberculosis movement has outgrown its traditional slogan. Merely to "fight tuberculosis," they say, is too low an aim—the time has come to set as our goal no less than the *eradication* of tuberculosis. Is that too ambitious? Conservatives hold that the phenomenal decline of tuberculosis during the past half century represents merely the down-stroke, artificially accelerated perhaps, of the normal tuberculosis cycle; a cycle which repeats itself approximately every century. In another generation, they predict, we shall witness tuberculosis again riding a mounting wave. But that dour prophecy takes no account of the effective means now at hand, to keep the ancient pandemic down. To the optimist it seems altogether probable that the downward trend of tuberculosis, whatever its biological explanation, can be maintained, which means that the vanishing point is not far distant. Strictly speaking, the eradication of tuberculosis implies the extinction of a species, the tubercle bacillus. This may be a biological impossibility but, practically speaking, it is not necessary to exact so severe a demand to achieve our end. From an epidemiologic standpoint we may speak of the eradication of tuberculosis when cases are so few that they become individually conspicuous and therefore easily controlled as spreaders of the infection. To do this it is necessary only to throw the biological balance against the tubercle bacillus by continuously and strictly isolating all bacillary hosts, for unless the tubercle bacillus captures an equivalent number of new hosts to

*The third annual John W. Bell Tuberculosis Lecture delivered before members of the Hennepin County Medical Society, December 7, 1936.

carry on its own succession, it is doomed to extermination.

No sooner does the tide of battle turn than the pursued becomes pursuer. In the past our chief concern has been defense, protection, escape. But in recent years our tactics have become aggressive. We are boldly undertaking now to search out tuberculosis in its many hiding places. Not content to wait until the disease strikes, we seek now to anticipate it before serious harm is done. That is the reason numerous communities are now experimenting with routine mass examinations of school children, college students and other youth groups. Already we have learned that the early case of tuberculosis in the adolescent is normally symptomless and will not be discovered in its early stage unless a deliberate and systematic hunt is made. And we know that infection in a young child means he has somewhere, sometime been in contact with an open case of tuberculosis. To run down that source is real preventive medicine. The cordon is being drawn tighter. Never before has anyone dreamed of attempting to ferret out infection in a whole population. We are flirting with the fantastic idea of eventually achieving tuberculin-free schools and communities just as we now actually have geographic areas free of tuberculous cattle.

Lest we forget, a word of warning to curb unreasonable hopes is in order. Granting the possibility of subjugating a microorganism, human nature must also be reckoned with—a human nature which is fitful and forgetful. Experience shows that a populace plagued by a disease enemy may be roused to such a pitch as to depress the danger to a vanishing point. When the menace no longer threatens, vigilance relaxes, and then the enemy sweeps once more into the unprotected ranks. For this reason the history of smallpox since Jenner's time is one of periods of quiescence, broken by sporadic recurrences, but never of absolute conquest.

In summary, these are the outstanding favorable factors:

A steadily declining death rate, a rising scale of living, an awakened public opinion.

Facilities at our disposal include: a good understanding of the pathogenesis, diagnosis and treatment of tuberculosis; an average of more than one sanatorium bed for each tuberculosis death; a network of diagnostic and control ma-

chinery, including an army of 10,000 public health nurses.

Among our modern weapons are: the tuberculin test; the x-ray; blood cell tests; the bronchoscope; collapse therapy.

Backing us up is the conviction that the continuous migration of the tubercle bacillus from person to person can be stopped. Reënforcing that effort is the aggressive movement to ferret out the disease and to prevent even infection. Spurring us on is the sporting chance of annihilating the enemy completely.

II

What stake has the practicing physician in the prospect of eradicating tuberculosis? Why should he rejoice when one more sector of his traditional field is about to be cut off? And how shall he appraise the numerous social developments designed to speed the end?

To the credit of the American doctor, the record shows that he has from the very beginning of the organized fight against tuberculosis, generously joined hands with the non-medical crusader, fully agreeing with him that tuberculosis is not merely a disease of certain tissues but a social problem of first magnitude. This fine record should forever silence the criticism that doctors' interests are too narrowly limited to sick organs. Candidness, however, compels us to admit that by and large the doctor in his capacity of private practitioner has not shown extraordinary interest in tuberculosis. This is not surprising—the wonder is that he has not been even more disinterested. The management of a case of tuberculosis is anything but stimulating or satisfying. Consider the difficulty of making a precise diagnosis, the discouragement of finding the disease already advanced at the patient's first visit, the exasperating indifference of some patients and the hypochondria of others. Consider the uncertainty of treatment results, the household snarls to be untangled, the lure of quick cures competing with the physician's prosaic advice. Add to that the fact that the family doctor seldom has the satisfaction of seeing a case through from beginning to end: the wealthy patient scurries off to a health resort; the poor one to a free institution. Only a few—those of moderate means who struggle on with a diminishing income, stay with him while he continues, unpaid but uncomplaining, to carry their burden.

neither the remuneration to be expected from, or the advertising value of, the average tuberculosis patient would rate high on the stock market. Contrast with the discouraging job of caring for the tuberculous patient the satisfaction derived from an obstetrical case; a period of watchful care, a few intensive hours at the time of delivery when skill and daring are called into play, a week or two of convalescence and when it is over the doctor enjoys the confidence of a happy mother, the worship of a doting father and he adds to his list of potential patients a healthy young specimen whom it will be a pleasure to guide through the shoals of babyhood. Whatever the financial reward of his labors these fruits at least satisfy his soul.

The doctor's enthusiasm has been further dampened by the very success of the tuberculosis fight. Easy accessibility to sanatoria and diagnostic clinics has all but taken tuberculosis as a medical problem out of his hands. The segregation of tuberculosis patients in sanatoria located usually far from centers of education has made it difficult for medical students to become adept in tuberculosis knowledge. Somewhat belatedly this error was recognized and in various ways and places the clinical material and experience of the sanatorium are now being made available to medical students and practicing physicians. Yet the inclination is to regard tuberculosis as something for institutional medicine to worry about. And while the medical profession has been unusually tolerant toward free diagnosis and treatment services for the tuberculous, it is unquestionably true that these privileges, intended for the ultimate benefit of the community and not for its pauperization, are occasionally abused.

The growing practice of group testing with tuberculin and x-ray is another social-medicine activity, the significance of which to the general practitioner merits thoughtful discussion. Medical societies which have considered the problem, with few exceptions, have concluded that it does not injure private practice. To make people aware of a threatening situation helps rather than hinders the best interests of the family doctor. Moreover, health departments and tuberculosis associations, which have taken up this kind of work, look toward the day when parents will seek the opportunity to have their children regularly tested with tuberculin and the x-ray. Yet none will deny that so-called tuberculin surveys

represent another invasion of organized society into the field of medicine, and therefore whether good or bad, it is of vital concern to the profession.

Whatever the private practitioner's attitude toward tuberculosis may be, and however he may view the social developments growing out of it, he is still the keystone of the arch. Statistics showing the number of patients cared for in diagnostic clinics and in sanatoria, give the impression that practically all tuberculosis work has been withdrawn from the general practitioner. That bland assumption is far from the truth. Of the approximately 650,000 active cases of tuberculosis in the United States today only about one-seventh are in hospitals and sanatoria and most of these have passed first through the hands of the private practitioner. The other six-sevenths, a half million more or less, are for the most part under the care of general practitioners or specialists. All too many are in the hands of quacks and a considerable number are muddling along without care of any kind.

III

Merely to do our bounden duty toward this army of half a million sick, particularly in the face of the stimulating prospect of eradicating tuberculosis, is far too low an aim. Tuberculosis work of the immediate future throws out a challenge for a finer, more complete service than we have been able to render in the past. It is two-fold—to perfect the practices with which we are already familiar and to add services not commonly offered by the family doctor in the past. Only a few of the items of modern tuberculosis practice can be discussed here.

Early Diagnosis.—Those who see the steady stream of patients entering the tuberculosis sanatorium deplore the all-to-evident delay in making the diagnosis. About five out of each six patients in our sanatoria throughout the country are classified on admission as advanced cases of tuberculosis. And this ratio has not improved to an appreciable extent for the past ten years, during which time an enormous amount of education of the people concerning the early danger signs of the disease has been carried on. One reason for delay in diagnosis is undoubtedly to be found in the lethargy of the people, coupled with the common human failing of not wishing to face unpleasant facts. Another reason is that the transi-

tion from early, "silent" tuberculosis to the moderately advanced stage, is often a relatively swift one and only by the barest chance is the case in the minimal stage detected. To what extent can the practicing physician increase his batting average of discovering the disease in its incipency?

Much improvement can be brought about by a constant alertness. No dragnet method will do—to find early tuberculosis it is necessary to have it in mind and to search diligently for it. Unless one is "tuberculosis conscious" slight clues are likely to be overlooked. More prompt use of the x-ray will help. The roentgenograph has passed beyond the stage of merely furnishing confirmation for percussion and auscultation findings; there are, in fact, able defenders of the thesis that what the experienced eye sees on a good roentgenograph is far more revealing than what the ear can hear through the stethoscope. Prompt consultation with the specialist also needs emphasis. Delay in securing the assistance of a phthisiologist in case of doubt is no more excusable than is the delay of the patient in seeking medical aid. In nearly every community today expert diagnostic aid is to be had even for those unable to pay. Last, but not least, the routine use of the tuberculin test is a measure every general practitioner may well adopt. A positive reaction in an adult means little, to be sure, but a negative reaction, when the diagnosis is in doubt, speaks volumes and generally rules out the necessity of following the tedious clue of tuberculosis further. Why not do the tuberculin test, as Krause has repeatedly recommended, at the very beginning of the physical examination and settle the question at once as to whether or not tuberculosis should be searched for?

The designation "suspicious case" is one which some believe should be abolished from the doctor's vocabulary. Certainly it is no longer necessary or justifiable to wait in a suspected case until unmistakable symptoms appear or until the sputum is positive, before making a diagnosis. The new era with its instruments of precision demands the clearing up of the contents of the old "suspicious" grab bag.

Contact Follow-up.—The second opportunity which the general practitioner can enlarge to his own benefit as well as the patient's is sounder and more thorough contact follow-up work. It is needless here to emphasize the extreme importance of contact. Every doctor now knows that

a diagnosis of tuberculosis, no matter how precise, is incomplete if limited to the single patient. Tuberculosis is a household epidemic; the patient before you may be but one focus of it. The responsibility of the family doctor is not discharged until he is sure of the physical status of every member of the family. The slogan "From whom did he get it—To whom has he given it?" should be touched off in the doctor's mind whenever he has a case of tuberculosis before him.

Contact follow-up work is at best far from being satisfactory. In the very efficient clinic conducted by the Henry Phipps Institute it was possible after a year of systematic follow-up visitation involving hundreds of calls, to persuade only 48 per cent of known contacts to report for an examination. It is true that among those who did come the disease was discovered in 11 per cent, a rich reward indeed for the tedious effort, but the disconcerting fact remains that only about one-half of the persons definitely exposed to tuberculosis could be persuaded to have an examination. Can contact work be improved?

Korns demonstrated that it can. In Cattaraugus County (N. Y.) contact examination has been for years a major activity of the Bureau of Tuberculosis. During the period 1923-1930, 52 per cent of contacts were examined. In recent years, Dr. Korns, the director of the bureau, has himself assumed a definite share of the responsibility of educating the patient in order to facilitate the work of the public health nurse. In the period that followed, namely, 1931-1935, the number of contacts examined was 62 per cent, an increase of 10 per cent.

Not only was there an increase in the number of contacts examined, but the time interval between discovery of the case and examination date of the contact, was shortened by Korns' intensive efforts. In the period 1923-30, 48 per cent of contacts under twenty years of age were examined within six months, whereas in the period 1931-35 almost twice as many, 87 per cent, were examined within the first six months. Excellent as the case-finding machinery in Cattaraugus County had been, it was materially improved in efficiency by the personal effort of the doctor.

Management of the Patient.—The general management of the tuberculous patient in the hands of the general practitioner can be vastly improved. The acutely sick person needs a dictator and fortunately wants to be bossed—at least

until convalescence. But the tuberculosis patient is engaged in a long drawn out struggle, the outcome of which depends almost entirely upon what he is willing to do for himself. Tuberculosis is more than a pair of sick lungs; it is a pathological condition of the whole man, physically and emotionally, and affecting even his family. Someone must teach him how to reorganize his whole life. He must learn to captain his own ship (with the doctor's guidance during the worst storms) through many troubled waters. The only other alternative is to resign himself to a mill-pond existence for the rest of his life—a defeatist attitude we cannot tolerate today. Records of past performance of doctors in teaching their patients are not flattering. For instance, Williams and Hill, who studied the experiences of 1,499 tuberculosis patients handled by private practitioners, found that 42 per cent were not instructed how to dispose of their sputum, 47 per cent were not told to use only their own dishes, 37 per cent were not cautioned to sleep alone, and only 17 per cent were given printed or written instructions. Certainly that record has been bettered in the past few years but there is still room for improvement.

Incidentally, it was Osler's struggle with the management of his tuberculous patients, that prompted him to send a young woman medical student into their homes to instruct them and their families and to see that orders given in the office consultation were understood and carried out. That experience was one of the factors responsible for the public health nurse movement.

Management of the patient includes the determination of the form of treatment to be prescribed. Shall the patient before you be referred to a phthisiologist, or be sent to the sanatorium, or can he be trusted to a cure at home? Most pertinent in this modern day is the question as to whether or not the lung should be collapsed. Pneumothorax is indicated in perhaps 50 per cent of cases of active tuberculosis and sometimes the figure runs as high as 80 per cent. In deciding the question not only the welfare of the patient but also the interests of society must be considered, for one of the chief advantages of lung collapse is that it quickly renders the patient's sputum negative. Pneumothorax should be undertaken only by the physician skilled in its technic and experienced in

its indications but no doctor who undertakes to manage a case of tuberculosis can afford to be ignorant of its values and applications.

Modern management must also include a consideration of the patient's rehabilitation after recovery has been achieved. Training and placement on the right job are essentials in the treatment of tuberculosis. To neglect them is to invite relapse. The family doctor cannot be expected to have a detailed knowledge of working conditions and employment trends, but just as he depends upon others for sputum analysis and x-ray service, so he should be able to guide the patient to social resources of the community competent to readjust the patient to normal living.

Determining Date of Infection.—Our vista of the future of tuberculosis includes a virgin field begging to be occupied by the up-to-date practitioner. It has to do with the anticipation of tuberculosis, not merely its detection when patients come to him on their own initiative. Tuberculin test surveys have led the way and have prepared the people for the acceptance of a service not yet commonly offered by the family advisor. Why should not the family doctor provide this form of insurance against tuberculosis? Years ago Sir Robert Philip advocated the tuberculin testing of all children annually from shortly after birth until the first positive reaction appears. Determining not only the fact but also the approximate date of infection, he said, would help enormously in locating the source of infection. So long as the child reacts negatively all is well. When the test for the first time becomes positive the doctor knows that the infection has taken place in the past twelve months. This narrows his search down to the events of the immediate past and increases the possibility of putting his finger on the source. Moreover, knowledge of a recent infection puts the doctor on his guard, for while it is true that the first infection usually heals spontaneously it does seem wise to shield the child during the period of activity of the primary lesion and to give him every favorable chance. Somehow Sir Robert's idea has never caught on. He was perhaps ahead of his time. The time seems ripe now, however, to try out the scheme seriously. With a little encouraging publicity on the part of health educators it should not be difficult to create a demand among intelligent parents for

this kind of medical service. Such a plan fits in admirably with the modern trend of pediatric practice which emphasizes health guidance of the growing child.

From an epidemiological standpoint testing young children is far more productive than testing older ones. If the object were to find the maximum number of positive reactors we should, of course, examine older age groups, say adolescents, for the infection rate rises steadily with increasing age, but by that time the infections of many are already long established. A 15-year-old-boy, for example, has many contacts outside the home and school and to search out the source of his infection is a discouraging task. The pre-school child, however, has had but few contacts and those mostly in the home. Therefore his tuberculin reaction is a much sharper clue. Radeker, who examined large numbers of children in the Ruhr area shortly after the war when conditions were most deplorable, found that 20 per cent of infants reacted to the Pirquet tuberculin test, whereas of 13-year-old urban children, 80 per cent reacted. But in the case of infants he was able to locate the sources of the infection in 90 per cent, whereas among the older children his search was successful in only 20 per cent.

If parents can be persuaded to have their young children tested with tuberculin periodically, it should be equally possible to establish the practice of having adolescent children x-rayed regularly during their growing-up period. We may find after the experimentation now going on in many communities that the college and high school health services can do this more efficiently and economically by the routine method but that will not absolve the private practitioner who sets himself out to be the family health advisor, from his responsibility.

Care of Children.—There is also the question of the care of children found to be positive reactors, and those with roentgenograph shadows of primary lesions. What action is the doctor likely to take when a parent comes to him bearing a notice from the school physician that her child is a positive reactor? The intention is that he should try to answer the question why this child is infected, that he should investigate all possible contacts and exclude the possibility of further infection. Actually we know that not a few doctors pay scant attention to such notifica-

tions, and some are known to criticize the school doctor for "meddling." Another group of doctors welcome the suggestion that the positively reacting child be studied but would dismiss a such cases (after having satisfied themselves that they are not in contact with an open case with the dictum that the first infection or so-called childhood type of tuberculosis is always benign and hence needs no treatment. Certain experienced observers, however, caution that neglect of the child with demonstrable lesion is dangerous. Pope states that children with positive reaction plus childhood type lesions are much more likely to develop phthisis than positive reactors without such lesions, and Rathbun's earlier calculations indicate that a child with demonstrable primary lesions is about twenty-seven times more likely later to develop serious tuberculosis than a child without such lesions. The rational advice seems to be that all children with so-called benign lesions be placed under observation until they have safely weathered the stormy period of adolescence.

A few years ago a keen interest in preventorium spread over the country. The feeling was that the vast army of "pre-tuberculous" children need a special kind of care. At present the soundness of the idea that the preventorium is a means of combating tuberculosis, is being re-examined. One argument in favor of the preventorium is that it is necessary to break the contact by taking the child out of the home, to which it is replied that a better way of achieving that end is to remove the active case to a sanatorium. Another argument is that infected children should be protected against strain and that they need to be taught how to lead a healthy life; to which is answered that what the preventorium does for the child should be available to him in the average home with the coöperation of the school. How to bring about that ideal is, of course, another matter. Certainly in large industrial centers with their heavy quota of "problem families" or in areas where the prospects of securing sanatorium beds are poor, or under other unfavorable circumstances, the preventorium serves a useful purpose. Given adequate social facilities, there is no medical need of the infected or contact child that cannot be met by the private doctor.

Team Work.—The several fields here briefly sketched will be properly occupied by the doctor

only if he is willing to gear his practice into the present public health and social machinery. Finding new cases, detecting early infection, instructing the patient; these are among his many responsibilities. But he is not a teacher, social worker nor administrator. His office is, however, a clearing house in touch with all the agencies coming in contact with the problems of the tuberculous. The aid of the specialist, the help offered by the sanatorium, the diagnostic clinic, the tuberculosis association and the facilities of welfare agencies are his for the asking. Coöperation with the health department is particularly necessary. To make this coöperation easy the health department asks for a report of all cases of communicable diseases of which tuberculosis is one. This is not an arbitrary request but is one made for the welfare of the doctor, the patient and the public. Yet, the experience of health departments in the country as a whole reflects scant credit on the medical profession.

Even in a state (New York) where case reporting is better than the country's average, only 24 per cent of the cases on record were reported one year or more before death, while 45 per cent were reported after death. The reasons for such lukewarm coöperation are too many and complex to discuss here but none are unsolvable. Numerous health departments have demonstrated that a mutual confidence between doctors and the officials results in an enormous improvement in case reporting.

In the new era the physician will continue, as he has in the past, to participate in the broad tuberculosis movement. This movement is not, as some designate it, a "lay" enterprise nor, as others think, a medical activity, but an instru-

ment of democracy. The voluntary health association is the voice of the people in matters pertaining to health. This "voice" looks to the medical profession for guidance in medical matters, but the doctor serves as a participant—not as dictator. Is it not significant that the tuberculosis associations of this country based on the principle of partnership have stood the test of time, have spread a network over the entire country and have succeeded? For our own good and for the general welfare we must continue to be part and parcel of the movement.

Summary

1. The steady downward trend of tuberculosis, the recent discovery of new measures for dealing with it and the organized efforts now being made, support the hope that tuberculosis can be eradicated in the near future.

2. In spite of the many public and social facilities for combating tuberculosis the general practitioner still plays the major role. While his interest in tuberculosis generally is a fine public-spirited one, tuberculosis as a private medical problem is difficult, not very satisfying and complicated by numerous social implications.

3. There are, however, certain new services and improvements of old ones that the general practitioner can render to speed the success of the effort to reduce tuberculosis to a controllable minimum.

4. If the general practitioner will gear his efforts into the complex social machinery now existing, both he and the people will be the gainers. Success of the dream to free mankind of his ancient enemy depends now upon coöperation, persistence and courage.

PRESENT STATUS OF FIRST INFECTION TUBERCULOSIS*

VIKTOR O. WILSON, M.D.
Baltimore, Maryland

THREE reasons have prompted my choice of the title of this paper: First, the disease is sufficiently new and the latest knowledge has been so recently acquired that it should command interest. Second, several Minnesota clinicians have been leading contributors to the newer knowledge of first infection tuberculosis. Minnesota definitely leads the rest of the nation in the development and use of these facts. And third, the newer knowledge of first infection tuberculosis has placed this disease distinctly within the responsibility of the family physician.

First infection tuberculosis has previously been known as epituberculosis, hilum disease, and the childhood-type of tuberculosis. The weight of evidence indicates that its pathogenesis depends upon the allergic response of normal tissues to the first implantation of tubercle bacilli. Myers³ states, "The reaction of the human body to this first contact with the tubercle bacillus is so characteristic and so different from subsequent contacts that it appears to be an entirely different disease." The first attack of tubercle bacilli on human tissues is the result of contact with a person or animal suffering from tuberculosis or carrying tubercle bacilli for tuberculosis is a contagious disease. Following this first implantation of tubercle bacilli, there is an incubation period estimated by Stewart⁶ as three to eight weeks, and by Wallgren⁷ as three to seven weeks. During this time the patient shows no evidence of illness.

Through this incubation period, the bacilli, acting as foreign bodies, stimulate the cytological defense mechanism of the tissues, and, through it, the formation of the primary tubercle. All of the tubercle bacilli do not become immediately fixed at the point of original implantation. In fact, some of them drain into the regional lymph nodes. Here they cause tuberculous adenitis with its surrounding inflammation and this phase of the process was previously known as hilum disease. This combination of a primary tubercle and regional lymphadenitis is now referred to as the primary complex.

As the process reaches this developmental stage

the patient becomes febrile. Fever, then, is the first manifestation of the patient's systemic reaction to tuberculo-protein, the toxin produced by the tubercle bacilli. This fever may be so low and transitory as to pass unobserved, or intense local reactions may develop about the newly formed tubercles and reach immense proportions. When the latter occurs, the febrile reaction may be great and persist for as long as five months.

Soon after this manifestation of toxemia, the positive skin reaction to tuberculin can be elicited. Thus the patient has passed through the pre-allergic stage and has acquired a sensitivity or allergy to tuberculin which may be of lifelong duration. This sensitivity or allergy to tuberculin is now known to be requisite to the development of the reinfection or adult destructive type of tuberculosis.

Finally, or, at least, usually, resolution follows with scar formation and calcium deposition. This stage extends over a two to four year period and terminates with the formation of calcified Ghon tubercles and glands.

First infection tubercles may be single but are usually multiple. They may be microscopic in size, or the surrounding inflammation may involve a whole lobe of the lung. This pneumonic type of consolidation of the primary lesion was the first to attract attention and has become known as the typical lesion of the disease. This lesion, however, is practically never seen after infancy. Also, while many first infection lesions are sufficiently large to be detectable by x-ray films, the majority are microscopic in size. Although they may form and may be present in any tissue in the body, the only tissues in which they can be easily demonstrated by x-ray study are the lungs.

During the incubation period, before the tissues become sensitized to tuberculin, there is no diagnostic agent available to determine the presence of tuberculosis. After the development of allergy, a positive tuberculin skin test will always identify those patients who have the first infection type of tuberculosis and who, consequently, are susceptible to the more serious reinfection forms of the disease.

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Formerly it was believed that many people first became infected with tubercle bacilli in early infancy. In the groups tested in the first decade of this century, nearly one hundred per cent of even young adults reacted positively to the tuberculin test. Many European cities reported a high percentage of young children positive to the test, as for example, Gratz, 58 per cent, and Vienna, 94 per cent. The tuberculin test, therefore, was discredited. In 1924, Slater⁵ found only 11 per cent of Minnesota rural school children reacting positively to the von Pirquet test.

This is a distinct contrast with the present prevalence of tuberculous infection. In 1934, the Minnesota State Sanatorium epidemiologist, working in the smaller cities and rural areas of Minnesota, found only 6 per cent of the school children reacted to the Mantoux test. Lees and Myers² have shown that the incidence of positive tuberculin tests among university adults declined from 32 per cent in 1928 to 24.9 per cent in 1932. Group testing has shown that, at the present time, only a small percentage of infants and children of Minnesota are infected with tubercle bacilli and the number is rapidly decreasing. It is now safe to say that most people reach adult life before they are invaded by the tubercle bacillus. Many have their first contact with the germ in old age and some pass a lifetime without becoming infected with tuberculosis. Thus, the tuberculin test becomes increasingly important in the diagnosis of tuberculosis. To the family physician who treats all diseases, an examination is not complete without it, and, by its routine use, the practitioner is soon aware of the location and extent of tuberculosis in his practice.

The diagnosis of first infection tuberculosis is a relatively simple task. A positive tuberculin test identifies those who have a focus of tubercle bacilli somewhere in their bodies. It does not indicate whether it is a primary lesion or the adult destructive type. Neither does it tell the stage of progress, age, or location of this tubercle. A history of the patient's past illnesses is not likely to be significant because first infection tuberculosis does not cause distinctive symptoms. History of exposure to tuberculosis is important if present, but, if absent, is of no value. A history of erythema nodosum is particularly significant. Wallgren⁷ observed seventy-five cases of erythema nodosum in which the Mantoux test was

negative before and positive after the erythema. In a number of his cases, the date of tuberculous infection was known, and the erythema nodosum immediately preceded the allergic stage. This does not mean that all erythema nodosum is tuberculous.

Physical examination of patients with first infection tuberculosis is remarkable for the paucity of findings. Even the pneumonic consolidation type may not reveal physical signs, or, at most, there will occasionally be slight changes in resonance and whispered voice. Râles, usually, are not present. Of course, if the lesion is superficial, as in cervical adenitis, it is easily found.

During the period of toxemia, when the patient is developing sensitivity to tuberculo-protein, an increased blood sedimentation rate is found. Only rarely do these cases have positive sputum. In children tubercle bacilli are found by examination of stomach washings, feces, or smears from pharyngeal swabs. These examinations are used when the patient cannot, or does not, expectorate.

The x-ray plate is of limited value in the diagnosis of first infection tuberculosis. This is due to the fact that only a few lesions or their subsequent changes cast shadows demonstrable on the x-ray film. The lesion may not be in the lung; or, if in the lung, it may be obscured by such denser tissue as the heart, diaphragm or ribs. When shadows are present on the thoracic x-ray film they may be single or multiple and may vary from barely perceptible size to large, homogeneous, lobar consolidations. Cavitation is rarely present. The shadow may extend outward from the hilum in fan-shaped outline. When such a shadow extends posteriorly, it appears in the antero-posterior film as simple hilar enlargement. Hence, lateral or oblique films may be required to demonstrate the lesion. Calcification is a prominent roentgen-ray characteristic of first infection tuberculosis. All lesions do not calcify and in some instances calcium is absorbed. Many leave permanent, dense, calcified scars.

Employment of all these diagnostic measures, a detailed history, careful physical examination, laboratory tests including the Mantoux test and x-ray study, seldom leaves the diagnosis undetermined. Infrequently, a mildly sick infant or child is seen in whose examination no abnormal findings except a positive Mantoux test can be demonstrated. Even in such a case the positive

tuberculin test alone indicates the presence of a tuberculous focus. Though the lesion cannot be found, the patient is subject to all of the dangers of reinfection tuberculosis, either endogenous or exogenous, and consequently warrants practically as much attention as the child with extensive, easily demonstrated, primary tuberculosis.

In the past much has been written about the treatment of first infection tuberculosis. Myers³ and Stewart⁶ from their experiences at Lymanhurst School conclude that no special medical treatment of these cases requiring institutionalization is necessary. On the other hand, certain precautions in the management of such cases have been emphasized. Wallgren⁸ has frequently observed tuberculous meningitis develop during the febrile stage of first infection tuberculosis. He believes that, if the patient is kept in bed four to six weeks after the fever subsides and the sedimentation rate has returned to normal, there will be an appreciable decline of tuberculous meningitis in children. Several arguments are put forth in favor of a program of treatment for this disease. In the first place, a child with a positive reaction to tuberculin is allergic to the tubercle bacillus and its toxins. These children are, therefore, candidates for the serious reinfection forms of the disease such as consumption, Pott's disease, or meningitis. They have foci of live, virulent tubercle bacilli in their bodies. Robertson,⁴ after examining at autopsy the calcified scars of aged persons, demonstrated that tubercle bacilli may remain alive and active throughout a lifetime. Furthermore, serious reinfection types of tuberculosis are known to develop from these endogenous sources. As already mentioned, Wallgren⁸ has noted the occurrence of meningitis complicating first infection tuberculosis. Myers³ has stated that 10 to 20 per cent of such patients eventually develop reinfection tuberculosis.

Inasmuch as death resulting from the first infection type of tuberculosis is extremely rare, it is obvious that a program of treatment which will best prevent reinfection, either endogenous or exogenous, is indicated in this disease. Such a program should embrace four features. Of first importance is the separation of the patient from the source of infection. At the present time in Minnesota, with bovine tuberculosis controlled, the source of infection is usually a human case with positive sputum. Separation is

best accomplished by isolating the positive sputum case in a sanatorium. First infection tuberculosis patients should not be segregated in institutions. Institutional care, with its danger of cross infection involving acute infectious diseases, has no influence on the tuberculosis superior to that of care in the home. Burns,¹ in 1929, called attention to the unsatisfactory procedure of institutionalizing childhood tuberculosis, and the preventorium at the Minnesota State Sanatorium was discontinued in 1930. Today, preventoria are being closed to these patients.

Second, bed rest is imperative during the toxemia of the allergic stage. Such rest should extend over a period of four to six weeks after the disappearance of fever and the return of the blood sedimentation rate to normal. This rule should result in an appreciable decline in the serious reinfection tuberculosis superimposed upon the first infection type.

Third, after the allergic stage, and while the primary lesion is undergoing resolution and calcification, the patient should receive the benefit of extra rest, good food including vitamins, fresh air and hygienic surroundings. Such measures are advocated with the hope that the tuberculous focus will become strongly and permanently walled off.

Finally, it is important that the family physician establish an x-ray and physical examination routine at frequent intervals. This not only ensures the patient's observance of treatment, but also aids in detecting the adult destructive form at the earliest possible moment. The radiograph is the only infallible means of identifying reinfection pulmonary tuberculosis in the early, easily cured, presymptomatic stage. Physical examination should bring early spine or joint tuberculosis under treatment while there is hope of preventing serious deformity or disability.

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MALIGNANCY OCCURRING IN ADMISSIONS TO GLEN LAKE SANATORIUM*

CHARLES K. PETTER, M.D.†

and

E. P. K. FENGER, M.D., F.A.C.P.‡

Oak Terrace, Minnesota

SINCE our report of eight cases of coexistent cancer and tuberculosis in 1929, we have carefully watched the admissions to Glen Lake Sanatorium for the occurrence of cancer. The results of this observation and some comments on malignant neoplasm and tuberculosis constitute the basis of this report. To the group of patients who showed coexistent malignancy and tuberculosis we have added another group which is of special interest to phthisiologists in that these patients were sent to the sanatorium with diagnoses of various forms of tuberculosis and were, after some study, found to have, instead, a malignant neoplasm.

The simultaneous occurrence of malignant neoplasm and tuberculosis in the same patient or tissue, as well as the infrequency of the combination have been the basis for the wealth of medical literature. No attempt will be made in this paper to review and correlate these many case reports and discussions, but a brief statement of some of the varied opinions expressed will, I am sure, prove interesting.

One group of observers advances the opinion that malignancy and tuberculosis are mutually antagonistic. This viewpoint was first taken and vigorously defended by Rokitawski in 1841. The most recent and comprehensive paper on this subject is that of Pearl, which is a report of autopsy findings in several series of patients. In 816 individuals with malignancy he found 6.6 per cent showing active tuberculosis as compared with 16.6 per cent tuberculosis in an equal number without cancer. Conversely in a series of 886 patients (both sexes) with active tuberculosis 1.2 per cent were found to show malignancy. This group was controlled by an equal number of patients with no recorded tuberculosis who showed malignant tumor in 9.3 per cent. From

this he concludes that the diseases are antagonistic and that coexistence is therefore rare.

Another opinion, well supported by experimental work and statistical material is that tuberculosis predisposes to cancer, because of the prolonged chronic inflammatory nature of the tuberculous process. Thomas Cherry of Melbourne has in the past several years carried out a great amount of experimental work to prove this point, and Ewing considers pulmonary tuberculosis a vital etiologic factor in the development of broncho-pulmonary malignancy.

Cherry has recently published a report in which he reviews his previous work, experimental and statistical, and adds a statistical report which is very interesting. This author noted in the mortality tables for Great Britain and Australia, that the combined death rates from tuberculosis and cancer approximated 20 per cent. For the ten year period ending in 1851 the death rate for cancer was 4 per cent, while that for tuberculosis was 16 per cent. In the period from 1922 to 1931 cancer scored 15 per cent and tuberculosis between 4 and 5 per cent. From this he concludes that as the more progressive races become resistant to repeated infections with tuberculosis the individuals do not develop the usual picture of tuberculosis, but rather develop cancer. This conclusion is further supported by his recent experimental work with mice repeatedly infected with tuberculosis. Cherry noted that these animals developed a lymphocytic reaction microscopically similar to that seen in mice who developed tumors and malignant ulcers of the intestine.

Dermatologists have long considered lupus as a forerunner of epithelial malignancy and this sequence of events has been noted frequently.

A third group of observers have contended that the existence of malignant neoplasm and tuberculosis in the same individual is merely a coincidence, there being neither antagonism between the two nor a tendency for one to lead to the other. Carlson and Bell in 1929, reviewing

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†From the department of Surgery, Glen Lake Sanatorium, Oak Terrace, Minn., and the University of Minnesota, Minneapolis, Minn.

‡From the department of Medicine, Glen Lake Sanatorium, Oak Terrace, Minn., and the University of Minnesota, Minneapolis, Minn.

eleven thousand postmortem examinations found no evidence to support the theory of antagonism. Eppinger also adheres to this idea that there is no inter-relation between malignant neoplasm and phthisis.

In 5,905 first admissions to Glen Lake Sana-

parallels that reported by Pearl, of 1.2 per cent.

An analysis of the cases in which tuberculosis existed along with a malignant neoplasm (Table I) shows twenty-three with far advanced, eleven with moderately advanced, and five with incipient pulmonary tuberculosis, while three patients

TABLE I. FIFTY-NINE CASES OF MALIGNANCY ADMITTED TO GLEN LAKE SANATORIUM

Group		No. Cases
1	F. A. pulmonary tuberculosis with malignancy	23
2	M. A. pulmonary tuberculosis with malignancy	11
3	Inc. pulmonary tuberculosis with malignancy	5
4	Bone tuberculosis with malignancy	3
5	Malignancy without demonstrable tuberculosis	17

TABLE II. TWENTY-THREE CASES OF FAR ADVANCED PULMONARY TUBERCULOSIS WITH MALIGNANCY

Case	Sex	Age	Malignant Lesion	Metastases
204	F	50	Carcinoma of breast	Spine
616	M	46	Bronchogenic carcinoma	
634	M	48	Sarcoma of eyeball	
704	M	65	Carcinoma of stomach	
1308	M	50	Papilloma of antium	Liver and nodes
1670	M	62	Carcinoma of stomach	
1863	F	20	Cerebral glioma	
1897	M	48	Malignant epidermoid of face	
2285	M	57	Papillary carcinoma of sigmoid	Thyroid
3231	F	43	Medullary carcinoma of breast	
3612	M	68	Hypernephroma	
3663	M	65	Carcinoma of penis	
3805	M	63	Basal cell carcinoma of face	General
3950	M	42	Carcinoma of tongue	
4006	M	72	Carcinoma of stomach	
4391	F	47	Scirrhus carcinoma of breast	
4754	F	25	Melanoma on foot	Liver
5033	M	58	Basal cell carcinoma of cheek	
5148	F	61	Papillary cystadenoma of ovary	
			Carcinoma of ascending colon	
5713	M	67	Multiple myeloma	Nodes
5891	F	32	Carcinoma of pancreas	
6130	F	36	Epithelioma of cheek	
6319	M	31	Carcinoma of penis	

torium, malignant neoplasm of some organ has been encountered in 59 individuals, or 1 per cent. Of these fifty-nine patients, forty-two had both malignancy and tuberculosis, while seventeen showed malignancy only. Deducting from the total admissions all patients diagnosed as non-tuberculous we find that the incidence of combined tuberculosis and cancer in our group very nearly

presented an osseous tuberculosis with cancer in some viscus.

In the far advanced pulmonary group (Table II), the age range was from twenty-five to seventy-two years, averaging fifty, with males predominating fifteen to eight. Malignancy was encountered in the following structures in the frequency given: skin 5, stomach 3, breast 3, penis

2, ascending colon 2, with eight other structures involved singly. One patient with carcinoma of the ascending colon and liver metastases had also a papillary cystadenoma of one ovary. Another patient presented a bronchogenic carcinoma with metastases to the spine and another a hypernephroma with thyroid metastasis, while a fourth

noma of the maxilla, esophagus, sigmoid, prostate and lung each complicated the tuberculosis in five cases. The bronchogenic carcinoma in this one case (No. 5762) proved extremely difficult to differentiate from the pulmonary tuberculosis in the same lung. Only the rapid decline of the patient (whose sputum was nega-

TABLE III. ELEVEN CASES OF MODERATELY ADVANCED PULMONARY TUBERCULOSIS WITH MALIGNANCY

Case	Sex	Age	Malignant Lesion	Metastases
549	M	55	Carcinoma of maxilla	Ribs sternum Nodes
551	M	58	Epithelioma of face	
1007	F	52	Carcinoma of breast	
1355	F	55	Scirrhus carcinoma of breast	Liver
2073	M	47	Carcinoma of esophagus	
2224	F	66	Carcinoma of sigmoid	
2916	M	50	Carcinoma of stomach	
3177	M	60	Epithelioma of face	
4048	M	55	Carcinoma of stomach	
5466	M	70	Carcinoma of prostate	
5762	M	66	Bronchogenic carcinoma	

TABLE IV. FIVE CASES OF INCIPIENT PULMONARY TUBERCULOSIS WITH MALIGNANCY

Case	Sex	Age	Malignancy	Metastases
1134	F	36	Adenocarcinoma of ascending colon	Liver, lung Kidney (?)
3770	M	57	Carcinoma of stomach	
5300	M	39	Carcinoma of stomach	
5359	F	54	Adenocarcinoma of sigmoid	2nd Lumbar vertebra.
5708	M	54	Bronchogenic carcinoma	

showed general metastases from a malignant melanoma, and two others with carcinoma of the stomach and penis, respectively, showed secondary invasion of regional lymph nodes only. None of the cancerous lesions in this group produced pulmonary metastases and only one case (No. 616) showed an inter-relation of the two diseases, namely pulmonary tuberculosis and bronchogenic carcinoma of the same lung.

The moderately advanced pulmonary group is made up of eleven cases, eight males and three females, ranging in age from forty-seven to seventy years, and averaging fifty-eight (Table III). In this group, epithelioma of the skin of the face, carcinoma of the breast, and carcinoma of the stomach each occurred twice while carci-

noma of the maxilla, esophagus, sigmoid, prostate and lung each complicated the tuberculosis in five cases. The bronchogenic carcinoma in this one case (No. 5762) proved extremely difficult to differentiate from the pulmonary tuberculosis in the same lung. Only the rapid decline of the patient (whose sputum was nega-

tive), unexplained by the x-ray appearance of the chest until an extensive atelectasis developed, made the presence of malignancy a clinical possibility. Case 2916, which we reported in detail in 1929, presented an interesting pathologic finding, not encountered in any of our other cases where thorough anatomic study was carried out. Tubercle formation, normal gastric mucosa and carcinoma cells were found in the same microscopic field, while another section of the stomach showed a typical tubercle completely surrounded by tumor cells (Table V). This patient then had a combined tuberculosis and carcinoma of the stomach.

Incipient pulmonary tuberculosis and malignancy

nant neoplasm were found in only five patients, aged thirty-six to fifty-seven, averaging forty-eight (Table IV). The gastro-intestinal tract was involved by the malignant tumor in four of these five while a bronchogenic carcinoma existed in the fifth. This latter case had been diagnosed as tuberculosis on the history and x-ray

the symphysis and extensive abscess and fistula formation over perineum and buttocks, was originally treated for these lesions. Two years following his discharge he returned after a catheter had been inadvertently pushed through his prostatic urethra, into the rectum. At this time a carcinoma of the prostate and rectum was found.

TABLE V. THREE CASES OF OSSEOUS TUBERCULOSIS WITH MALIGNANCY

Case	Sex	Age	Tuberculosis	Malignancy	Metastases
1292	M	64	Costochondral	Basal cell carcinoma of face	Nodes
1364	M	35	Symphysis pubis	Carcinoma of prostate and rectum	
5122	F	44	7th & 8th dorsal vertebrae	Carcinoma of breast	

TABLE VI. SEVENTEEN CASES OF MALIGNANCY ADMITTED WITH DIAGNOSIS OF TUBERCULOSIS

Case	Sex	Age	Malignant Lesion	Metastases
370	M	39	Sarcoma of mediastinal lymph nodes	Lung
1596	F	32	Carcinoma of peritoneum	
2218	M	26	Carcinoma of testis	
2255	M	44	Carcinoma of lung	
2408	M	49	Adenocarcinoma, primary undetermined	Lung, axillary nodes
2428	F	37	Squame cell carcinoma of larynx	Cervical nodes
3070	M	52	Sarcoma 9th dorsal vertebra	Ilium
3249	M	64	Carcinoma of esophagus	Lung, liver, nodes
4285	M	48	Teratoma testis	Lung
4695	F	39	Carcinoma of breast	Pleura
5030	F	50	Melanoma of heel	Lung, rib
5357	F	46	Hemangioendothelioma; of spine, ribs, femur	
5362	F	54	Carcinoma of cervix	
5368	F	55	Carcinoma of lung	
5378	M	60	Bronchogenic carcinoma	Skin
5622	F	17	Embryonic neuroganglioma of dorsal sympathetic, with erosion of 10th dorsal vertebra and 9th and 10th ribs	
6124	M	45	Bronchogenic carcinoma	

appearance of the chest. On further study in the sanatorium, the x-ray picture was considered to be that of a malignancy rather than tuberculous infiltration. However the sputum was persistently negative on smear, and only repeated positive guinea pigs established the diagnosis of concomitant tuberculosis.

Three patients (Table V) presented the combination of bone tuberculosis and malignancy of other structures. Here again the males predominated and the ages ranged from thirty-five to sixty-four years, averaging forty-eight. One of these patients, a negro, with tuberculosis of

The other cases were carcinoma of the breast and tuberculosis of the vertebrae, and a costochondral tuberculosis combined with epithelioma of the skin of the cheek.

Probably the most interesting group is that composed of the seventeen patients referred to the sanatorium as tuberculous, in whom we could demonstrate only malignant neoplasm (Table VI). This group presented primary pulmonary malignancy in five cases and pulmonary metastases from some other primary tumor in five other instances, thus accounting for more than half the cases. Three other patients were ad-

mitted to the orthopedic service with diagnoses of tuberculosis of the spine, but which on further study were found to have the following malignant diseases:

1. Sarcoma of ninth dorsal vertebra.
2. Hemangioendothelioma involving several vertebrae, ribs, and femur.

Carcinoma of the testis mistaken for tuberculous epididymitis, a malignant melanoma of the heel previously diagnosed tuberculosis, and a sarcoma of the mediastinal lymph nodes constitute the balance of this group.

Of these seventeen patients nine were males and eight females, while the average age was

TABLE VII

Location of Malignancy						Metastases				
	No TBC.	F.A. TBC.	M.A. TBC.	INC. TBC.	Bone TBC.	No TBC.	F.A. TBC.	M.A. TBC.	INC. TBC.	Bone TBC.
Skin	9	1	5	2		1				
Lung	8	5	1	1	1					
Breast	7	1	3	2		1				
							General Spine		Spine	
								Nodes R Sternum		Nodes
Stomach	7		3	2	2					
Sigmoid	3		1	1	1		Liver, Nodes		Kidney(?)	
Testis	2	2						Liver	Liver	
Penis	2		2				Liver		Lung	
Prostate	2			1		1				
Vertebra	2	2					Ilium			
Esophagus	2	1		1			Lung, Liver, Nodes			
Asc. Colon	2		1		1					
Peritoneum	1	1					Lung			
Larynx	1	1					Nodes			
Mediastinal										
Nodes	1	1								
Cervix	1	1					Lung, Rib			
Sympathetic										
Ganglion	1	1								
Eye Ball	1		1							
Antrum	1		1							
Cerebrum	1		1							
Kidney	1		1							
Tongue	1		1				Thyroid			
Maxilla	1			1						
Pancreas	1		1							
Multiple										
Myeloma	1		1							
	59	17	23	11	5	3	Total 8	6	3	1
							21			

3. An embryonic neuroganglioma of the dorsal sympathetics, causing pressure erosion of the ninth and tenth dorsal vertebrae and the adjacent ribs on the left side.

One patient in the group having a squamous cell carcinoma of the larynx was sent to us with a diagnosis of tuberculous laryngitis and complicating cervical node involvement.

forty-five, the range being seventeen to sixty years.

Malignant neoplasm must always be considered in the differential diagnosis of tuberculosis. When considering pulmonary lesions one should remember that malignancy here is apparently on the increase and in patients of middle age or beyond presenting the symptoms of cough, expectoration, hemoptysis and rapid decline, malig-

nancy should be considered in preference to pulmonary tuberculosis. There are no symptoms or physical findings pathognomonic for bronchopulmonary malignancy. The symptoms may simulate upper respiratory infection, may be only a lingering cough, while there may be blood streaked sputum or frank hemoptysis. Tempo-

Summary

1. Fifty-nine cases of malignant neoplasm occurring in 5,905 admissions to Glen Lake Sanatorium are shown in order of their frequency
2. Seventeen of the fifty-nine patients presented malignancy which had been diagnosed as tuberculosis.

TABLE VIII

	Male	Female	Age Range	Average	Metastases
Malignancy only	9	8	17-60	44.5	8
F. A. pulmonary tuberculosis with malignancy	15	8	25-72	50.2	6
M. A. pulmonary tuberculosis with malignancy	8	3	47-70	57.6	3
Inc. pulmonary tuberculosis with malignancy	3	2	36-57	48.	3
Bone tuberculosis with malignancy	2	1	35-64	47.6	1
59 Cases Totals	37	22	17-72	49.6	21

rary bronchial stenosis may produce acute findings suggestive of lobar pneumonia. Pain in the chest, increasing in severity is often an early sign.

X-ray examination of the chest and bronchoscopic examination are of extreme value. Metastatic tumors of the lung can rarely be diagnosed without x-ray of the chest. Bronson summarizes the diagnosis of pulmonary malignancy as follows: "Recurrent cough and blood streaked sputum negative for tubercle bacilli; x-ray not characteristic of tuberculosis should arouse suspicion of malignancy."

One of us, in lectures on extra pulmonary tuberculosis given to medical students, has always stressed the importance of considering malignant tumors, both primary and secondary, in the differential diagnosis of tuberculosis of bones and joints, lymph nodes and skin especially. The three orthopedic cases just cited, with the bronchogenic carcinoma metastasizing to a vertebra in the advanced pulmonary group, and the carcinomatous larynx and the sarcomatous mediastinal nodes, encountered in our series serve to emphasize this teaching point.

Smear examination of sputum and exudates should always be checked by guinea pig inoculation, for experience has shown that tubercle bacilli are notoriously hard to find in coexistent cancer and tuberculosis by smear alone. Biopsy of accessible tissues should be done whenever possible for this procedure may at times be the key to a diagnosis.

3. In this latter group, primary and metastatic pulmonary tumors occurred in 60 per cent and bone tumors in 18 per cent.

4. The average age of these patients was at the upper end of the age range for tuberculosis and at the beginning of the cancer age.

5. Coexistence of cancer and tuberculosis occurred before thirty-five years of age in 12 per cent and before thirty in 2.4 per cent.

6. In the face of a lingering cough, hemoptysis and negative sputum, with an x-ray picture of the chest not characteristic of tuberculosis, pulmonary malignancy should be strongly suspected, especially in a person past middle age.

7. Primary and metastatic tumors must always be considered in the differential diagnosis of extra pulmonary tuberculosis.

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THE NAME OF THE DOCTOR*

ARTHUR N. COLLINS, A.B., M.D., F.A.C.S.

Duluth, Minnesota

IT IS with deep gratitude that I appear before you on this occasion to acknowledge the high honor conferred upon me when you elected me your president. In taking my place in the list of honored physicians who have led the way for me as presiding officers in this vigorous organization, I cannot but feel a keen sense of pride and a feeling of warm friendship for all its members. It is my hope that the Northern Minnesota Medical Association will grow larger and broader each year; larger in the sense of increasing yearly attendance and broader, in that each member will come to know his practising confrères better and to find himself in greater sympathy with them. It is this last sentiment which furnishes the keynote for my remarks.

In this day, it is no small blessing that we belong to a profession of such vast accomplishments and far-reaching beneficence. Were we responsible for all this ourselves there might be just cause for exultation. But it is an inheritance for the greater part. Most of the glory belongs to our predecessors. Our traditions have been woven from the finest fibre found in our professional forefathers. Medicine today is the product of the past and the foundation of the future.

In the past, medicine was an infinitude of dogma and opinion. In the present it is beset by incursions of economic difficulties in bringing the best of present day scientific medicine to all classes of our people. In the future, medicine will be more and more scientific, but how much of the old will suffer disproof and be sloughed off from the curriculum of the past and of the present, remains to be seen. Certain it is however that the high ideals which sprung from the fine characters of our predecessors will endure through the generations of physicians who will follow us. Atavism, or reversion to a former type, will indeed be far removed from a profession which has shown itself to be so virile and forward-looking as the medical profession.

Progress in healing the sick is our tradition. This great tradition, our dearest possession, is

like a mighty tree grown straight. The younger generation is reared beneath it, the mature thrive in its environs and the old die with its stalwart form still in full view.

Every thinking physician realizes before he has practised many years that this inheritance has come to him through no virtue of his own and he may feel his unworthiness in having it thrust upon him. But he is powerless to ward it off and must accept it. It was created for him by those who preceded him and it was presented to him by an invisible hand at the time he received his diploma. Progress must be his watchword.

Volumes have been written on the good deeds of the doctor. He hears it at banquets and in the church. He is reminded often that he has adopted an honorable profession. He begins to feel pride in it and he tries to merit it.

Listen to Robert Louis Stevenson's "Eulogy of the Doctor."

"There are men and classes of men that stand above the common herd, the soldier, the sailor, the shepherd not infrequently, the artist rarely, rarer still the clergyman, the physician almost as a rule. He is the flower of our civilization and when that stage of man is done with, only to be marvelled at in history he will be thought to have shared but little in the defects of the period and to have most notably exhibited the virtues of the race. Generosity he has, such as is possible only to those who practice an art and never to those who drive a trade: discretion tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Herculean cheerfulness and courage. So it is that, he brings air and cheer into the sick room and often enough, though not so often as he desires, brings healing."

The name of the doctor is buoyed up and sustained by public opinion. He can maintain it thus if he is faithful to his trust. His sincerity is his safeguard. He can make mistakes, as all men do, and be forgiven. He is human and all his neighbors allow for that. He has his faults as all have but these are overlooked by a generous public. Surely no man could start his career with the cards more in his favor, for the doctor has a good name.

But how about his regard for his fellow prac-

*Presidential Address before the Northern Minnesota Medical Association, Fergus Falls, Minnesota, September 1, 1936.

tioners? Does he admit they have ability equal to his own or will he say that competition is keen and that reputations must suffer? Will he be tolerant of professional mistakes he might discover in others? Or will he call attention to such mistakes? Does he think because Doctor Newman comes to practice in Pleasantville after Doctor Olderman that he is the better physician? Was Tennyson, because he came after Shelly therefore the greater poet?

Let us see, with a concrete situation at hand, what may befall a doctor. He finds himself at the crossroads. Which way shall he take? No power on earth could make him accuse a legitimate confrère, the maker of a mistake, as being a quack, a crook, a criminal or a scoundrel! But he might just suggest, partly to show his superior knowledge, partly from his position of security, that there was a mistake made. It is often difficult to decide at the crossroads. A malpractice suit might result from his words or from his attitude. If he could only remember at such a time what was said about doctors at the banquet and the pride he felt at that time. Was it meant for him only or for other doctors too, including the one who made the mistake?

While he is choosing his course in this critical moment let us see what experience has taught in such matters.

If a malpractice suit is started he will no doubt be called upon to testify and if he "downs a competitor" in this way he may have a temporary exaltation. But how can this endure in a man who has felt pride at the banquet-talk-about doctors? Are his professional friends beginning to distrust him or is this merely his imagination? Was that remark he may have overheard indicative of distrust on the part of his patient? It might be imagination. But is the type of his work deteriorating? Doesn't he tend to work alone? Doesn't he know of another doctor in the same situation who became a "down and outer," an abortionist and a dealer in narcotics? The name of the doctor is what matters.

He has been watching the doctor who made the mistake. Both went to the same medical school and received the same teaching. They are not friends now. That mistake and the lawsuit have fostered an inferiority complex in the "doctor of the mistake." He feels his confrères regard his work as of poor quality. He may feel they believe him guilty of wrongdoing.

The situation is so changed! He was once so cheerful and on such good terms with his fellow practitioners! Now he wonders whether the worry of medical practice is worth while. Unless helped and cheered by his confrères he may develop a mild form of melancholia reflecting detriment not only upon himself but upon his family and his entire professional following.

Each of the physicians in an episode of this character can with justification devoutly wish such a nightmare obliterated from the minds of all men including himself. It is not merely the name of doctor A or of doctor B which matters so much but the name of the doctor in a large sense, that name which belongs to all of us which suffers; doctors warring against each other in the courts and before the public eye!

It would be in keeping with good sense to remind ourselves from time to time that whereas we rejoice in our ability to bring comfort and healing into the lives of our patients, we have also a solemn civil responsibility to them and to the public and it behooves us to review for our own good this civil responsibility in some of its tenets which directly concern us.

Every physician should possess in his library and keep ready to hand a volume on this subject. He should read it from time to time and thoroughly digest its teachings. His civil responsibility in the conduct of his practice is indeed no minor matter.

Here are a few important phrases concerning the civil responsibility of the physician taken from a competent authority (Mitchell of Massachusetts).

One who engages to undertake the performance of any duty, trust or employment agrees to do it with honesty, skill and assiduity.

Errors of omission are treated with greater leniency by the courts than errors of commission.

Physicians and surgeons must use ordinary care regardless of whether they were compensated or not. The law in this country does not distinguish between physicians and surgeons.

Where the patient does not cooperate with his physician, thereby injuring himself by his own wilful or negligent conduct, he cannot hold the practitioner responsible for the results to which he contributed and it makes no difference whether or not the patient was prevented from following the physician's directions because of his condition.

The burden of showing a want of the necessary skill must be proved at the trial by the patient in order to secure judgment against the physician. On the other hand the burden of proving contributory negligence is on the defendant.

The law says that where a person knows the dangers incidental to certain undertakings, he is by law deemed to have assumed the risk and consequently cannot complain if injury results. From this it would seem that a physician and surgeon can forestall malpractice suits against himself by warning the patient of unpleasant possibilities and expressly stipulating with him that in such a contingency he shall not be answerable. It is always best to tell the patient that a perfect result is by no means certain.

It is well to emphasize the matter of care and skill; an erroneous diagnosis does not necessarily give a right of action to the injured party, but must have been the result of negligence or a want of skill on the part of the physician, through a wrong diagnosis followed by improper treatment is good ground for an action for malpractice.

The performance of a surgical operation on a patient whose consent has not been obtained will render the operator liable for damages to that person. The patient must be the final arbiter as to whether he shall take his chances with the operation, or take his chances living without it. Such is the natural right of the individual, which the law recognizes as a legal one. Consent, therefore, of an individual, must be either expressly or impliedly given before a surgeon has the right to operate.

During an operation already authorized, new conditions may be discovered or may develop in the most unexpected manner and in such emergency-cases the physician will be justified in performing an operation without any consent, if the operation is necessary and expedient. The

burden of proving that the operation was not justified by consent of the proper person rests upon the plaintiff.

The law will presume, until contrary proof has been adduced by the patient, that care and skill were used by the physician in his treatment and the burden of proof is upon the plaintiff to show that the physician was negligent or unskillful.

All our experiences are made up of two elements: first the outward circumstance and second the inward interpretation. Are we at all times competent to sit in judgment on the motives of our brother practitioners? Tolerance is born in some men, absent in others and is difficult to cultivate by many. We should guard against self-complacency. We should seek new values in tolerance and coöperation. We are unselfish so far as our general group is concerned. The next step is to apply this quality individually and to stand up for our brother physician. We may not have fallen below the standards of our predecessors, but is it clear that we are above them in clarity of vision and bigness of purpose? Humanity has been on this planet many thousands of years. Our brain is apparently as large as that of the man of the ice ages. Is our soul no greater?

The doctor, if he prays at all, let him say: make me a competent guardian of the health of my patients and make me charitable toward any shortcomings of my fellow practitioner even as he is charitable toward me and should he stumble and fall give me wisdom and courage to lend him a helping hand.

Then as we carry on in our work from day to day let us remember these sturdy lines from Robert Burns:

For a' that and a' that
Their dignities, and a' that
The pith o' sense and pride o' worth
Are higher rank than a' that.

THYROIDITIS*

MARTIN NORDLAND, M.D.

Minneapolis

THE inflammatory reactions in the thyroid gland occur more frequently than is supposed. These inflammations vary according to their association with or independence of any goiterous process, and in the common classifications are divided into those which suppurate and those which do not. The non-suppurative type usually attacks the comparatively healthy gland and is often designated as "simple thyroiditis" while the type with a tendency to form pus usually occurs in goiterous nodules and is called "acute suppurative thyroiditis." Clinically these types can usually be differentiated and recognized by their general symptoms without the aid of the laboratory. In the subacute or chronic type of thyroiditis the diagnosis cannot be made without a microscopic examination. In this latter group come the rather rare fibrotic types of thyroiditis, the diffuse, referred to as "Riedel's struma," and the more localized type of Hashimoto.

The significance of inflammatory processes in the thyroid can best be emphasized by presentation of some typical cases and a discussion of some of the problems in diagnosis.

Acute Non-Suppurative Thyroiditis

The following case will illustrate the rather common type of acute non-suppurative or simple thyroiditis.

A physician, thirty-six years of age, had had a severe attack of laryngitis. This had begun to quiet down when tenderness and swelling was noted in the region of the thyroid gland. Within two weeks pain developed on swallowing solid food. The tenderness which started in the right lobe of the thyroid gland gradually spread to the left lobe as it disappeared from the first side. During this time the temperature varied from 99° to 100°. On examination the thyroid gland was found symmetrically enlarged. It was firm and definitely tender. There were no marked pulsations of the vessels and the gland was not adherent to the muscles. The basal metabolic rate was plus 15 per cent at the height of the symptoms and minus 17 per cent about one month later.

This rather common disorder of the thyroid may be caused by any infection, either within

the thyroid or secondary to some infection from without. When following some generalized or local infection, it is rather easily recognized. When it occurs within the gland, it is not so easily diagnosed. Generally it is benign and rarely recurs, but when it follows an infection such as scarlet fever, typhoid or influenza, it is more serious.

The treatment consists of rest in bed during the height of the infection together with the application of an ice collar and the administration of analgesics. When toxic symptoms are present, Lugol's solution should be administered. The disorder usually lasts from three to six weeks.

Acute Suppurative Thyroiditis

This type may occur late in the group classified as non-suppurative, primarily in the gland or complicating some adjacent inflammatory process, or secondary to a generalized infection. Primary suppuration in the gland is quite rare. The two following cases are of interest (1) to illustrate the problem in diagnosis and (2) to reveal the occasional severity and violence of the process.

A woman, forty-six years of age, came with the typical symptoms of acute thyroiditis. The symptoms, however, persisted beyond the normal time and the local pain and difficulty in swallowing increased. The basal metabolic rate was plus 16 per cent. A swelling gradually developed in the left lobe and pain was present over the entire gland. On palpation, the entire gland could be made out and the mass had a firm feel as in acute thyroiditis. Evidence of suppuration soon developed in the left lobe and an incision was made similar to that for thyroidectomy. About an ounce of pus was evacuated from the lower pole of the left side, drains were inserted and within two weeks the wound was healed. Dysphagia continued and difficulty in breathing developed. The patient had lost considerable weight and, because of the persistent difficulty in swallowing, an esophagoscopy was performed. A lesion the size of a hazelnut was found in the esophagus just behind the thyroid (Fig. 1). Section of a portion removed showed a squamous cell carcinoma (Fig. 2). A gastrostomy was performed and the patient was fed through a Witzel tube. The patient did not improve and died after six weeks. Postmortem examination revealed a primary carcinoma in the esophagus with

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invasion of the trachea and the thyroid, with a secondary *suppurative thyroiditis* (Fig. 3).

* * *

The second case is that of a man forty-two years of age who had had a large goiter for many years. Two

and the wound was firmly packed. On the fourth day on removing the pack, the hemorrhage recurred and the wound was again packed. After a few days the packing was gradually removed and the patient made a rapid recovery. One year after the operation, the



Fig. 1. (left) Gross specimen of carcinoma of the esophagus invading the thyroid with secondary acute suppurative thyroiditis.

Fig. 2. (upper right) High power squamous cell of the thyroid extending from primary carcinoma of the esophagus.

Fig. 3. (lower right) Low power squamous cell carcinoma of the thyroid complicated by acute suppurative thyroiditis.

weeks after a mild bronchitis he suddenly developed severe chills, fever which ranged from 101° to 103°, and extreme difficulty in swallowing. This was followed rapidly by spells of suffocation. All the symptoms increased rapidly and at the end of the third day choking became alarming. On examination the patient appeared septic, with a distinct enlargement of the thyroid in general but with a more conspicuous change on the right side. Palpation caused such severe pain that the examination was difficult. The gland seemed to be adherent to the overlying structures and was very tense (Fig. 4). At operation an incision was made as in an ordinary thyroidectomy. Lateral retraction of the prethyroid muscles was done and a large abscess cavity in the thyroid was opened. The cavity measured about four inches in depth and considerable quantity of pus was evacuated. There was very free bleeding

basal metabolic rate was minus 9 per cent and he has remained in good condition (Fig. 5).

In this type of thyroiditis again, the origin of the infection may be within the gland itself or secondary to infection from the outside. As illustrated in this case, the onset of suppurative thyroiditis is marked by violent symptoms of a serious nature. There was a history of a preceding infection of the respiratory tract and the secondary infection of the thyroid was ushered in with chills, fever and local tenderness together with difficulty in swallowing as the process progressed. Lahey has suggested that a diagnosis may be made in this type of case by making the

patient bend his chin toward the chest. In suppurative thyroiditis, breathing is thus made easy because of the relaxation of the pressure from the prethyroid muscles. If the abscess is not

thick-walled cyst, and the absence of temperature, would assist in the differential diagnosis (Fig. 6). Infection of the thyroid gland secondary to adjacent malignancy, as illustrated in



Fig. 4. (left) Acute suppurative thyroiditis.

Fig. 5. (right) Complete absence of local evidence of thyroid substance, one year after acute suppurative thyroiditis.



Fig. 6. Acute hemorrhage into old thick-walled cyst of the thyroid.

recognized and the patient is not operated upon early, the pus may rupture through the surface onto the neck, into the esophagus or trachea, or into the mediastinal space. If rupture occurred into the trachea or mediastinal space, a fatal result would occur. Without early incision, edema of the larynx would also be a very probable complication.

The treatment is always surgical and a wide incision should be made with thorough drainage. The incision should be made *transversely* as in thyroidectomy (never vertically) and the prethyroid muscles should be retracted laterally. Good exposure is important and the muscles should be cut if necessary to expose multiple abscesses. The outlook is usually good when the infection is primary in the gland or following a simple infection as in this case. The outlook is usually poor when the suppuration in the thyroid is secondary to a generalized infection.

The type of infection illustrated by this case may be confused with a hemorrhage into an old thick-walled cyst of the thyroid. In the latter case a good history, which reveals a sudden increase in size within a few hours after exertion, an x-ray examination which demonstrates the

the first case, is a very difficult condition to diagnose preoperatively.

Tuberculous Thyroiditis

Some cases of persistent non-suppurating thyroiditis are tuberculous in character. Tuberculosis of the thyroid is rare and is usually associated with a generalized tuberculosis. Routine histological examination of all goiters removed would often reveal, as in our case (Fig. 7), localized and circumscribed tuberculous lesions in goiters which give no indication of their presence. According to de Quervain, chronic suppurating thyroiditis, whether starting in a healthy or a diseased gland, is nearly always tuberculous. The presence of a persistent drainage from an inflamed area is often due to calcareous deposits in the suppurating nodule. In these cases an esophageal fistula should also be borne in mind.

Chronic Thyroiditis

Chronic thyroiditis occurs with relative infrequency and is usually dependent upon a microscopic examination for diagnosis. When the secretory structure of the thyroid is diffusely re-

placed by connective tissue, marked changes in metabolism occur and the gland assumes a peculiar hardness. This condition, first described by Riedel in 1896 and known as Riedel's struma,

a slight anteroposterior flattening of the trachea, the roentgenogram was negative. A tentative diagnosis of carcinoma of the thyroid was made and on August 28, 1930, an operation was performed, at which time the entire thyroid gland including the posterior capsule



Fig. 7. (left) Tuberculosis of the thyroid. Note the small amount of colloid substance within the tubercle.

Fig. 8. (center) Gross specimen, woody thyroiditis. Sections from all portions of the specimen show no normal tissue.

Fig. 9. (right) High power woody thyroiditis, showing extensive invasion with fibrous tissue.

is of interest because of its rarity and of importance because when seen is frequently confused with malignancy.

Such a case, a widow of fifty-seven, was seen first on August, 1930. Her symptoms consisted of progressive weakness which had been noticed for the past five years, but most marked for a few months preceding the examination. She became so exhausted that ordinary conversation tired her. For more than a year she had lost weight from 198 to 158 pounds. Her face had become puffy and an increasing pallor had become conspicuous. She noticed numbness in the hands and feet, had considerable headache and dyspnea, and gradually developed a sensation of pressure in her throat. A persistent aggravating cough had been present for more than five years. Eight years before the examination she had been observed for tuberculosis for nearly one year. She had been aware of the presence of a "goiter" for more than twenty years.

On physical examination, the patient attracted attention because of a peculiar pallor and because of a very dry skin. Looseness of the skin of the extremities gave evidence of a marked loss of weight. Her speech was slow and deliberate and she exhibited extreme exhaustion. Her pulse was 82, blood pressure 146/86. Otherwise the general physical examination was negative. The throat revealed on inspection an irregular mass in the region of the thyroid, the general outline of which corresponded to that of the normal gland. On palpation, the irregular mass was found to be slightly nodular and unusually firm. The lobes could not be demarcated. Manipulation of any portion caused movement of the entire mass and brought on severe spasms of coughing. She had no fever. The basal metabolic rate was minus 26 per cent and, except for

was removed (Fig. 8). Obliteration of the vessels as is usually found in malignancy of the thyroid was not present. The patient made a rather rapid recovery. There was no injury to the recurrent laryngeal nerves and the parathyroids were apparently preserved. This extensive operation was done because of the preoperative diagnosis of carcinoma.

Pathologic examination of the specimen by Dr. E. T. Bell excluded carcinoma. No active secretory tissue was found in the entire specimen, and while tuberculosis was suspected, no evidence of this was found. The final microscopic examination disclosed a "woody thyroiditis," an advanced chronic thyroiditis (Fig. 9).

The patient has taken thyroid extracts continuously since the operation, varying from 1 to 5 grains of desiccated gland daily. She has been in good health. The basal metabolic rate has varied from minus 3 per cent to plus 17 per cent with repeated observations.

The onset of chronic thyroiditis is slow and the time of its first appearance is not definite. Difficulty in swallowing is a common symptom. An uncomfortable sense of fullness, increasing at times to tenderness, is frequently present. A general weakness, increasing to the point where the patient prefers to lie in bed, is common. As in this case, talking often tires the patient and dyspnea increases to the point where operative relief is sought. A low-grade temperature is occasionally present. When the preoperative diagnosis is made, the treatment consists only in the operative relief of the dyspnea by resection of the isthmus to free the trachea.

Riedel's struma is perhaps as frequently mistaken for carcinoma of the thyroid as any thyroid swelling. It is usually necessary to depend on the microscopic sections for the final diag-

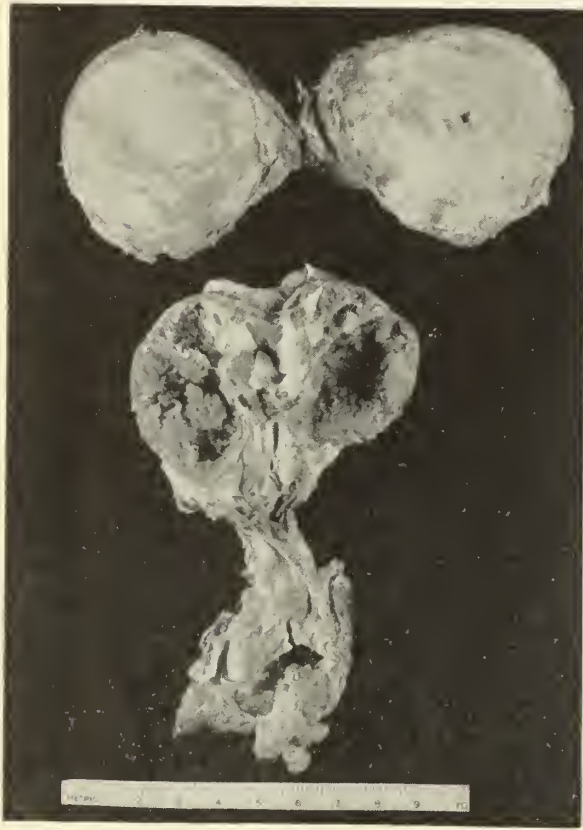


Fig. 10. Sarcoma of the thyroid, limited to the right lobe.

nosis. Riedel's struma, however, usually presents a symmetrical enlargement, is diffusely and bilaterally hard, retaining the shape of the normal gland. There is no fixation to the other tissues in the neck and huskiness of the voice is absent. The clinical differentiation of Riedel's struma from a malignant adenoma is always difficult. It is impossible to distinguish between the two when the inflammatory process is localized in one area of the gland, and when the malignancy is present in the early stages. Not infrequently the final differentiation of this tissue is made only by the histological study of the sections. In general, Riedel's struma is diffusely and bilaterally of stony hardness and the enlargement is

usually symmetrical, while malignancy is usually nodular and conspicuous in one lobe (Fig. 10). Nodules are seldom present, fixation of the tissues of the neck is rarely noticed and paralysis of the recurrent laryngeal nerve does not occur. The classical symptoms of carcinoma of the thyroid, such as hoarseness, stridor, choking, etc., which are dependent upon the invasion of the larynx, laryngeal nerves, trachea and esophagus, are usually those of the end stages. When these symptoms are present, the diagnosis of malignancy is not so difficult. It is in the early stages of malignancy that the differentiation from chronic thyroiditis is the most difficult.

The treatment of Riedel's struma, as previously stated, is primarily surgical, first, for *diagnosis* (mainly to *exclude carcinoma*) and, second, to *relieve pressure*.

Summary

Thyroiditis, while relatively common, is frequently not recognized. So often the basal metabolic rate serves as a criteria for the evaluation of all disturbances of the thyroid and the determining factors for operation on the gland, that the clinical features of this interesting group of cases are entirely lost sight of. The patient with Riedel's struma described in this paper was examined by physicians at various times and at one time the patient was referred for a special examination of her thyroid gland. Because, at the time of her examination, the basal metabolic rate was on the minus side, she was told that her thyroid disturbance was not significant. Thus a very rare and interesting case was overlooked. Had the diagnosis been made more on the physical findings, the patient would have been relieved earlier. Hyperthyroidism is only occasionally associated with the inflammatory processes of the thyroid gland, while hypothyroidism occurs frequently in association with and as a late sequence to these inflammations. The development of myxedema in later years would depend on the frequency and the degree of thyroiditis. Cases of idiopathic myxedema may have had an early thyroiditis. The significance of thyroiditis, therefore, cannot be overlooked.

CHRONIC HYPERTHYROIDISM*

Nodular Goiter

THOMAS O. YOUNG, M.D. and CLEMENT I. KRANTZ, M.D.

Duluth, Minnesota

FOR a number of years past, we have been increasingly cognizant of the fact that a not inconsiderable group of definitely diseased and toxic thyroids were being quite generally overlooked. Our attention was further centered on this fact by a recent paper by Davison and Poer² at the Chicago Meeting of the American Association for the Study of Goiter. In their paper the condition which we are to discuss was touched upon and very aptly designated "Chronic Hyperthyroidism." Whether or not this terminology will continue to be applied to this condition depends largely on its acceptance by the profession. For the purpose of this paper we feel that it is satisfactory and conveys the impression of a clinical entity in definite contradistinction to the more acute and fulminating conditions.

In defining chronic hyperthyroidism as applied to nodular toxic goiter, it was necessary to draw a line somewhere that would include all cases which, due to possibility of error in metabolism estimation or any other reason, could be considered questionable. In other words, the basal rate was lower in certain cases than the symptoms and physical findings would indicate. We have recognized the fact that a certain group of normal individuals have a basal rate from ten to twenty-five points below the average normal. Plummer⁷ states that in 20 per cent of apparently normal persons, the basal rate is not between +10 and -10, but between -10, and -20. If individuals with such low readings develop nodular toxic goiter with a small elevation in their basal rate, they still may fall below what we consider an average basal value.

For purposes of clarification we wish to show the classification of goiter which we are using as accepted by the American Association for the Study of Goiter.

While we are all familiar with the various forms of apparatus for the study and estimation of the basal metabolic rate, those of us who are particularly interested in thyroid work, recognize

the possibility of misinterpretation of true basal readings. For some time past, a high metabolic rate has been the deciding factor in advising operation. It is our contention that too much emphasis has been placed on the literal acceptance of this laboratory procedure. This has meant that certain patients have been needlessly operated upon, and that others, who would have been greatly benefited by operation, have not.

TABLE I. CLASSIFICATION OF GOITER

New	Old
Diffuse goiter	Simple colloid or adolescent goiter
Diffuse toxic goiter	Exophthalmic goiter, Basedow's disease, Graves' disease
Nodular goiter	Adenomatous goiter
Nodular toxic goiter	Toxic adenomatous goiter

Too careful evaluation of the history and physical findings cannot be made. The metabolism test should be used, not as a basis for diagnosis, but as added evidence for or against hyperthyroidism. Careful technic in doing the metabolism test cannot be emphasized too much. The acceptance of hyperthyroidism *per se*, because of an elevated basal metabolic reading, may in many cases lead to an erroneous diagnosis. Full knowledge of the fact that such conditions as nephritis with hypertension, malignancy, asthma, polycythemia, pernicious anemia, the leukemias, and other conditions, may and do cause an elevation of the basal metabolism, must be accepted. Such an elevation, without goiter or clinical signs of hyperthyroidism should suggest to the clinician a repetition of the test, plus a careful clinical search for the other factors which might be responsible. Mayfield⁶ reports that there are basal rates of +20 to +30, in cases which do not have hyperthyroidism. Conversely Gordon and Graham³ state that they have long recognized that patients may suffer from hyperthyroidism without elevation in the basal metabolism. In this report only cases having a basal rate of +20

*Read before the Northern Minnesota Medical Association, Fergus Falls, Minnesota, August 31-September 1, 1936.

or below, have been considered, and it is in this group that the largest percentage of error exists. For purposes of this study, 450 consecutive cases of diseases of the thyroid operated by one of us have been reviewed, and questionnaires were

Some of the patients studied had sought relief elsewhere for some time. The presence of thyroid enlargement was recognized, yet the condition had not been considered toxic, and treatment had been confined to sedation and other

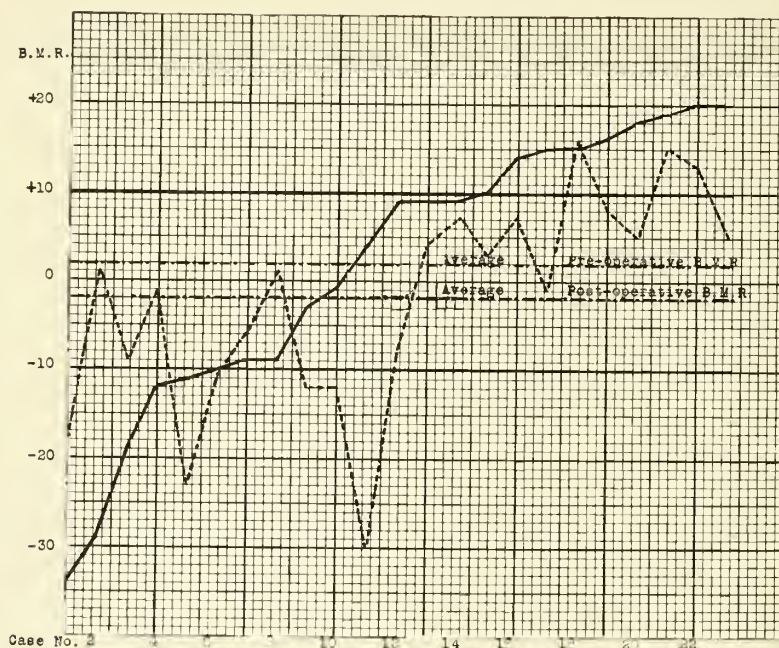


Chart 1. Comparison of preoperative and postoperative basal metabolic rates. Pre-operative readings are shown by the continuous line; postoperative by the dotted line.

sent to each individual. Replies were received from 235. Of this number sixty-four cases or 27.2 per cent fell into the group with which we are concerned. Of these sixty-four cases, forty-one had to be left out of our statistical study largely because they had not as yet reported for a postoperative metabolism study, which left twenty-three cases or 9.7 per cent of the total to form the basis of our report.

In the 450 records of operative cases, we found chronic hyperthyroidism to divide itself into two distinct groups. The first group consists of cases of nodular toxic goiter of the chronic variety to which we will confine our discussion. The second group consists of those of diffuse toxic goiter of the chronic variety which will be the subject of a paper now in preparation. In our series of cases the diagnosis was made and the operation advised on the clinical findings alone. Lockwood⁴ goes so far as to say that the policy in his clinic in Toronto during the past five years has been to operate all nodular goiters regardless of the basal metabolic rate.

measures as used in functional disorders. This definitely classifies this group as chronic.

This series of twenty-three cases was carefully studied from the standpoint of symptomatology, physical findings, and laboratory reports. In all cases the preoperative diagnoses were the same as the postoperative findings, and these were further substantiated by pathological section. There were twenty females and three males composing this group, whose average age was thirty-seven years. The youngest individual was fourteen, while the oldest had reached sixty-one years. The average blood pressure reading was 133/85, ranging from a low of 90/70 to a high of 178/80. The diastolic level showed a slight rise, as was to be expected. The average duration of goiter was 18.3 years, while symptoms had been present for one year and three months. It is of interest to note that we are dealing with a fairly young group, the average being thirty-seven years, in whom goiter had been present for a little over eighteen years. The pulse rate before operation was 87 and after

operation it had dropped to 79. Nervousness was complained of by twenty-three individuals before operation, while after operation this symptom had disappeared. In nineteen cases there was tremor prior to operation and in four

where the rate ranged below -10 , the average value before operation was -19.2 , while after surgery, it had risen to -10.2 , or an increase of 9 points. In Group II, which is considered

TABLE II. CHANGES IN SYMPTOMS AFTER OPERATION

Symptoms	Preoperative Cases	Postoperative Cases
Emotional instability	20	9
Nervousness	23	0
Tremor	19	4
Dyspnea	21	8
Palpitation of heart	4	1
Tachycardia	22	2
Loss of strength	16	0
Loss of weight	17	0

this symptom remained afterward. Emotional instability was present in twenty patients, and of these nine still complained of this to some degree. Cardiac palpitation was complained of by four individuals and this symptom disappeared entirely after operation. Tachycardia was a common complaint, being present in twenty-two cases, but only two noted this to any degree later. Dyspnea was present in twenty-one individuals and in eight it still persisted after operation. Strength was below par in sixteen, but in all it was regained after operation, while loss of weight was regained in the seventeen patients who had noted it. In the entire group of twenty-three, seventeen or 73.9 per cent, stated that they had been cured by the operation, and were now in normal health. In six, or 26.1 per cent, there had been improvement, but in no case did the operation fail to produce beneficial results.

In an effort to visualize what has happened to the basal metabolic rate, we have graphically represented the readings before and after operation in Chart I. This discloses the rather startling fact that the lowest rate was -34 . Yet in this individual, a girl of fourteen years, there were no symptoms of thyroid insufficiency. Davison and Poer² in their series, had one patient with a rate of -37 which agrees well with our findings. After operation, the rates varied from -30 to $+16$. The mean value for the rate before operation was found to be $+2$, while after operation, the value had dropped to -1.6 , a lowering of 3.6 points following thyroidectomy.

Rearranging these readings into groups, we find further interesting disclosures. In Group I,

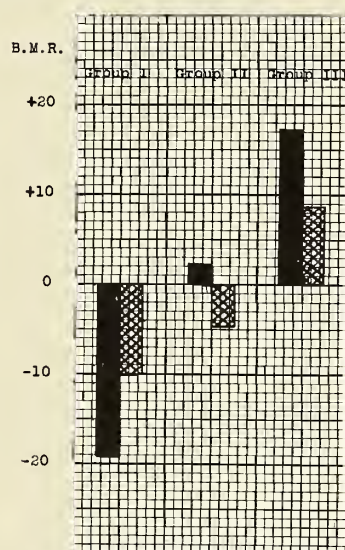


Chart 2. Comparison of basal metabolic rates before and after operation in different group levels. Group I, -10 or below; Group II, -10 to $+10$; Group III, $+10$ to $+20$. Solid black area indicates rate before operation; cross-hatched area, after operation.

the normal range of metabolism, the preoperative mean was $+2.1$, while it had fallen to -4.8 after operation, a drop of 6.9 points. Group III consists of those whose basal metabolism readings ranged from $+10$ to the upper limit of $+20$. In this group we find the greatest probability of error. The preoperative reading was $+17.1$, while it had dropped to $+8.3$ in the postoperative state, a drop of 8.6 points. It will be seen that in the postoperative state the basal metabolism tends toward more normal levels. In Group I, there was a rise, while in Groups II and III there was a moderate drop.

To illustrate our findings in a more concrete manner, we have selected two representative cases and report them herewith in detail:

Case 1.—An unmarried female patient, aged thirty-five, complained of goiter which had been present for twenty years. During the last year there had been considerable increase in the size of the goiter, but without symptoms of pressure. She had lost five pounds in weight. She had noticed some increase in nervousness with a moderate amount of emotional instability. The past few months there had been definite tachycardia and dyspnea upon exertion. Her health otherwise was good.

Her past history was negative with the exception of

an appendectomy in 1928, from which she had an uneventful convalescence.

The physical examination showed a well developed apparently healthy young woman. The detail was negative, except for the thyroid. This was large, and nodular. It measured 4x3 inches on the right, and 3x2 inches on the left, and extended substernally on both sides. The pulse rate was 80 and the blood pressure reading 120/84.

The thyroid tissue removed weighed 90 grams. It contained numerous coarsely and irregularly lobulated nodules, and was congested throughout. There were several nodules containing recent hemorrhages. Microscopic examination showed the usual picture of follicles lined with flattened or cuboidal epithelial cells. There was also a moderate degree of lymphocytic infiltration.

Diagnosis: Nodular goiter in a diffuse goiter.

This patient states that she was entirely relieved by thyroidectomy with the exception of slight shortness of breath on severe exertion. The basal metabolism before operation was -9 , while after operation it had risen to -6 .

Case 2.—A male, aged sixty-one, complained of increased tolerance to cold, shortness of breath, loss of weight, and weakness. He had first noticed enlargement of the thyroid fifteen years ago. There had been a gradual progressive enlargement since, which was apparent only on the left side. Cold had always bothered him a good deal. During the last two years there had been a marked change. He required less clothing on his bed, and on his person in the coldest weather. Dyspnea dated back three years. Following a period of hard work, he felt badly, and was short of breath on slight exertion. A definite fine tremor of the hands and fingers developed which he attributed to hard work and to coffee, the latter being a great stimulant to him. He stopped drinking coffee, took a vacation, and was considerably improved. His weight had always been under par, his best being 150 pounds. At the time of the examination it was 127 pounds, there having been a five pound loss during the last two years. His strength had decreased during this period, and frequent examinations failed to disclose the reason for the trouble. The blood pressure was 150/70. Several metabolism determinations had been normal or sub-normal. His past history was negative except for migraine attacks, and pleurisy four years ago.

The physical examination was negative, except for the presence of a nodular goiter and a fine tremor of his hands. The blood pressure was 146/70 and the pulse rate 78 per minute. The thyroid was palpable on the left side. It measured 3x2 inches, and extended substernally. The right side was not enlarged.

A partial thyroidectomy was done. The specimen removed weighed 60 grams. The tissue was irregularly lobulated, and congested, containing adenomatous cysts. The cut surface showed the internal layer of a cyst lined with tough scar like connective tissue measuring up to 2 cm. in thickness. This was formed by atrophic

thyroid tissue which was very fibrous in places. Other areas showed alternating grayish fibrous and pinkish hemorrhagic areas. Between the nodules there was a small amount of irregularly lobulated, edematous, connective tissue. Microscopically these nodules were lined with low cuboidal or flattened epithelial cells. The stroma was scarred in some areas, while in other it was more abundantly edematous, and occasionally hyaline. There was infiltration with lime salts in other places. Extensive diffuse hemorrhages were present in the connective tissue stroma.

Diagnosis: Nodular goiter.

The patient states that following thyroidectomy he has been relieved of all symptoms. His preoperative basal metabolism rate was -29 ; it had risen to $+1$ after operation.

Conclusion.—We feel that the evidence herein presented justifies our contention that a careful study of all border-line cases of nodular goiter should be made; furthermore that the clinical findings are of paramount importance in deciding upon operation. The basal metabolism determination should be considered only as an adjunct to the clinical findings and should not be used as a determining factor in deciding upon operation.

Summary

Twenty-three cases of chronic hyperthyroidism in nodular goiter have been studied with reference to symptoms, physical findings, and laboratory evidence. Removal of the goiter has resulted in clinical cures in 73.9 per cent, while 26.1 per cent were improved. The basal metabolic rate has tended to seek a more normal level after operation. There was no mortality in this series.

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THE THERAPEUTIC USE OF CONVALESCENT SERUM IN MUMPS*

ROBERT G. HINCKLEY, M.D.

Minneapolis

CLINICAL reports on the therapeutic use of convalescent serum in mumps are few in number, though, in the literature regarding its prophylactic use, there are references to the abortive nature of the cases that occur where prophylaxis is not successful. Metzulescu^{3,4} reported favorably on its uncontrolled therapeutic use in eight cases of severe mumps complications. A report was made by Iverson² on its use in a series of fifty-six cases with a 20 per cent incidence of orchitis as compared to fifty-six cases untreated with a 29 per cent incidence of orchitis. Cambessedes¹ in a report touches upon this problem.

The following article presents some evidence regarding the therapeutic use of convalescent serum for mumps. In January, 1935, an epidemic broke out in an agricultural secondary school on the campus of the University of Minnesota. The health of this group is under the supervision of the Health Service of the University. Students attending the school come largely from rural homes. They live in dormitories, use a common dining hall, and by other more or less intimate contacts make conditions favorable for the spread of communicable disease. There were at the time, 330 students ranging in age from fourteen to twenty-five years with a mean age of eighteen years. The clinical picture of the mumps cases was extremely severe. Convalescent serum was used in twenty-three of the seventy-eight cases occurring during this epidemic. The clinical results were compared with those in fifty-five cases not receiving serum.

Prophylactic administration was not attempted because necessary amounts of serum were not available. Serum became available in small amounts during the latter part of the epidemic and was used in the treatment cited. Donors of the blood were convalescent patients who had in every instance been afebrile for at least eighteen days. The serum used was prepared by the bacteriology department of the university.

Blood taken from Wassermann negative donors was pooled and centrifuged and the serum filtered and "plated" for sterility. All cases, except for serum administration, were cared for in the same manner, i.e., absolute bed rest until the elapse of five afebrile days after the recession of parotid swelling or the clinical subsidence of complications and symptomatic treatment.

The evidence presented is limited by the small total number of cases treated and comparable. There were inadequate controls at the period of serum administration which was at the end of this epidemic so that changes of virulence may have played a part in the apparent results.

TABLE I. COMPARISON OF UNILATERAL AND BILATERAL CASES

Total Number	Unilateral		Bilateral	
	No.	%	No.	%
	39	50.0	39	50.0
With Serum	14	6.09	9	39.1
Without Serum	25	45.5	30	54.5
Simple Cases	26	66.7	27	69.2
Complicated Cases	13	33.3	12	30.8
Without Serum after Mar. 1	1		3	

Comparison of the serum treated cases with the cases not so treated, is illustrated by the tables. Table I shows the occurrence of unilateral and bilateral cases to be equal (thirty-nine of each) for the whole group but with a decided decrease of bilateral cases in those treated with serum. There were nine or 39.1+ per cent bilateral out of the twenty-three serum treated cases, and thirty or 54.5+ per cent bilateral out of fifty-five cases not specifically treated. During the period of serum administration, the few untreated cases (four) perhaps indicated the original tendency toward bilateral parotitis (three bilateral out of four untreated cases). The incidence of complications shows no direct relationship to bilateral or unilateral cases: there were thirteen of the unilateral and twelve of the bilateral cases complicated with the

*From the Students' Health Service and the Department of Preventive Medicine and Public Health, University of Minnesota.

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same total number (thirty-nine) of cases in each group.

Table II shows that 32 per cent of the cases (seventy-eight) were clinically complicated by

febrile days. Differences of the mean number of febrile days and hospital days are apparently statistically significant.

Table IV illustrates the relatively great fre

TABLE II. COMPARISON OF SIMPLE AND COMPLICATED CASES

Total Number	Simple		Complicated		D.	
	53=67.9%		25=32.1%		P. E. Diff.	P. E. Diff.
With Serum	20=87.0%		3=13.0%			
Without Serum	33=60.0%		22=40.0%			
Average Number Hospital Days	10.66	± .219	13.80	± .413	.467	6.72
Average Number Febrile Days	4.37	± .195	7.84	± .330	.383	9.06
Average Peak Temperature	101.50	± .116	103.30	± .154	.193	9.07
Average White Blood Cells	6992		6408			

TABLE III. COMPARISON OF TREATED AND UNTREATED CASES

Total Number	With Convalescent Serum		Without Convalescent Serum		D.	
	23=29.5%	P.E.	55=70.5%	P. E.	P.E. Diff.	P.E. Diff.
Average Number Hospital Days	10.17+	.307	12.24+	.280	.415	4.99
Average Number Febrile Days	4.26+	.297	6.00	.255	.391	4.45
Average Total Dosage Serum	17.96+ c.c.					

other than parotid gland involvement. There was apparently a decrease in the number and percentage of complications in favor of the serum treated cases (13 per cent complicated of twenty-three serum treated cases and 40 per cent complicated of fifty-five cases without serum). The uncomplicated cases ran a shorter and milder course than the complicated ones as indicated by the average hospital stay, average number of febrile days, and average peak temperatures for both groups. The average white blood cell counts upon admission were approximately equal for both groups.

Table III indicates that the serum treated cases ran a shorter and milder course than the untreated cases even though the average total dose of serum per patient was but 17.96 c.c. The serum treated cases showed an average hospital stay of 10.17 days, and an average number of 4.26 febrile days as compared to the untreated cases with an average hospital stay of 12.24 days, and an average number of 6.00

TABLE IV. INCIDENCE OF GLYCOSURIA

	Glyco-suria		No Glyco-suria		No Record	
	No.	%	No.	%	No.	%
Simple Complicated Total	15	28.3	30	56.6	8	15.1
	10	40.0	12	48.0	3	12.0
	25	32.1	42	53.8	11	14.1
With Serum Without Serum Total	14	60.9	7	30.4	2	8.7
	11	20.0	35	63.6	9	16.4
	25	32.1	42	53.8	11	14.1

quency of glycosuria (32 per cent) for the group. It was more frequent in the complicated cases than in the simple cases (40 per cent and 28 per cent respectively). Glycosuria was apparently more frequent in the serum treated cases than in the untreated (61 per cent and 20

per cent respectively). The number of cases in each group is too small for statistical accuracy.

Summary

1. A small dose of convalescent serum administered intramuscularly in mumps cases as early as possible would seem to lessen the number of bilateral and complicated cases. Probably as a result of this and the subsequent milder course, the cases so treated required a shorter hospital stay.

2. Unexplained by the available evidence is the apparent but not necessarily true indication that glycosuria is more frequent in the serum treated cases than in those not so treated.

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HYPERINSULINISM WITH RESECTION OF THE PANCREAS*

W. C. CARROLL, B.S., M.D., F.A.C.S.

Saint Paul

HYPERINSULINISM, like hyperthyroidism, at times produces symptoms referable to the various systems of the body, but unlike hyperthyroidism, hyperinsulinism may not have any demonstrable gross pathological changes in any organ to which we may attribute the symptoms. It has been only within recent years that our attention has been focused on this extremely interesting condition but the literature now contains voluminous reports and articles which lead us to infer that we have been overlooking these cases in the past.

Allan,¹ who has written extensively on this subject, is skeptical of the high incidence that some have reported. On the other hand, Harris states that hyperinsulinism is a frequent and widespread disease, numerous cases having been reported by careful observers in many countries.

The pathological basis for hypoglycemia due to hyperinsulinism was first reported by Wilder, Allan, Power and Robertson of the Mayo Clinic. In this case, Doctor W. J. Mayo found a carcinoma of the island tissue of the pancreas from which insulin was isolated. Then, from the metastatic carcinomatous nodules in the liver, insulin was also obtained. Again in the Mayo Clinic Bulletin of February 2, 1936, a similar case is reported.

Wilder has stated, "The situation is analogous to that of the early history of surgery in hyperthyroidism. The results in this new field ought

to be as good as those now obtained in hyperthyroidism by thyroidectomy, and I predict they will be." Finney and Finney³ showed that removal of large portions of the pancreas are comparatively safe.

Symptoms.—These vary with the individual patient and may be produced in some who have higher sugar levels than one would expect should cause symptoms. Symptoms of hyperinsulinism do not occur at any definite blood sugar level in all cases. However, it seems to be agreed that if the fasting blood sugar falls below 70 mg. for each 100 c.c. of blood, symptoms may appear. In order to obtain a significant reading, the blood sugar determination must be made during the severity of the attack before time, medication or food have had an opportunity to affect the level. I feel that cases are undiagnosed because the blood cannot be obtained at the appropriate time or because a glucose tolerance determination is not made. Headache,² nervousness, tension, fatigue, body trembling, sleepiness may be found in the mild cases, while coarse tremors, blurred vision, unconsciousness, convulsions or amnesia are present in the more severe forms. Actual psychosis has been reported. Double vision, verbosity, and loss of orientation are noted in some after recovering consciousness. Abdominal pain has been noted by Graham,⁴ especially in the left upper quadrant. The symptoms usually appear before meals or when one has been forced to omit a regular meal. Those with mild hypoglycemia may have an ulcer periodicity of symp-

*From The Saint Paul Clinic, Saint Paul, Minnesota. Read before the Ramsey County Medical Society, Saint Paul, November 30, 1936.

toms, with food relief and the appearance of symptoms as the stomach becomes empty. In an individual with hyperinsulinism, the skipping of a meal or unusual physical exercise may initiate symptoms while a normal person can withstand excessive exercise or fasting without any noticeable effect. It has also been noted that during the premenstrual period symptoms of hypoglycemia are more often seen. Several deaths have occurred during coma as it is difficult to differentiate from other coma states unless a blood sugar determination is obtainable. Unconsciousness may last from a few minutes to several hours.

*Diagnosis.*⁵—The diagnosis is established by the following considerations:

1. Blood sugar determinations must be taken during an attack and these must be low.
2. Symptoms can be induced by fasting or vigorous physical exercise.
3. The symptoms can be relieved by taking sugar and, in the severe cases, glucose intravenously.
4. The glucose tolerance test practically always has a very low blood sugar level in the three hour specimen. This test, however, has not been as reliable as one might expect.

Allan¹ states: "The demonstration of hypoglycemia does not lead directly to the diagnosis of hyperinsulinism, for the blood sugar level is influenced by several factors in addition to the production of insulin by the pancreas. Disorders of other endocrine glands, particularly the pituitary and suprarenals; failure of the liver with respect to carbohydrate metabolism and certain diseases of the muscular system may also be responsible for depression of the blood sugar. If it is not accompanied by other signs to indicate the origin of the trouble, exact diagnosis is impossible. The tendency to apply the diagnosis of hyperinsulinism to any case where low blood sugar is found cannot be justified. In fact, definite diagnosis of hyperinsulinism cannot be made, in my opinion, unless surgical exploration or postmortem examination shows the presence of an islet tumor, or hyperplasia of the islet tissue of the pancreas. Until there are available methods of differentiating the origin of the changes in blood sugar, it seems preferable to stop with the diagnosis of hypoglycemia alone."

Cambridge reported 200 cases of chronic hypoglycemia and said that nearly all had some gastrointestinal symptoms which were relieved by dieting. Studies on marathon runners by Levine showed that physical exhaustion produces physiologic hypoglycemia.

Treatment.—Adrenalin, thyroid extract and pituitary extract have been advised but apparently are of little lasting value. A high protein or fat diet has been used lately and its advocates have felt that it produced better results than a high carbohydrate intake. The reason for this is that increasing the sugars in the diet causes a stimulation of the pancreas to produce more insulin and thereby establishes a vicious circle.

Dietary measures should be tried in all cases before more radical treatment is advised. Low carbohydrate diet, continued with high fat and frequent feedings seems to diminish excessive insulin production and to raise blood sugar levels. A number of these patients are overweight and in these cases, fats should also be reduced, and a low caloric diet, with frequent feedings, should be tried. Result of the diet may be tested by blood sugar determinations. It is difficult, as it is in diabetes, to make the patient realize the strict measures which are necessary, but in true hyperinsulinism indiscretions or deviations from the routine prescribed produce disastrous results which usually brings the patient to the realization that adherence to the strict routine is necessary. A good remedy for averting an impending attack is a cup of strong coffee or a hypo of caffeine. This stimulates the adrenals and temporarily raises the blood sugar. Continued use of strong caffeine drinks may later aggravate the symptoms. Phenobarbital is recommended as the best sedative to use in this condition. Adrenalin may restore consciousness in a few minutes, but its effects are only temporary. John reports using insulin in the treatment of hyperinsulinism, giving it after meals. It prevents the usual blood sugar rise and eliminates the stimulating of insulin production. Deep radiation has been used but its effect on the liver and stomach may be deleterious.

Surgery.—After definitely establishing the diagnosis of chronic hyperinsulinism and determining that the pituitary appears to be normal, operation may be advised. As many have previously pointed out, if it were possible to accu-

tely diagnose the presence of an islet tumor, when the medical treatment would be superfluous, and, in fact, contraindicated, as operation would offer the only relief. The tumors are supposed to cause more acute, severe and progressive symptoms than functional hyperinsulinism. Fortunately, indeed, are they who find an islet tumor in the pancreas which can be removed. In about one-half the cases which have been explored, these small islet tumors have been found. They are small, averaging about 1.5 cm. in diameter, and may be either single or multiple. This is an important fact to remember as search for additional tumors should always be made. They are most commonly found in the tail of the pancreas, where the Islands of Langerhans are most numerous. These small tumors are well encapsulated, reddish or purplish pink in color and stand out in contrast to the surrounding tissue. Careful inspection and palpation of both sides of the pancreas should be done and any suspicious deep area explored so as not to overlook these small neoplasms. In cases where careful search fails to reveal a tumor and the liver is apparently normal, one should then proceed with a partial resection of the pancreas, removing from two-thirds to three-quarters of the organ. There is nothing else left to offer these unfortunates, from a surgical standpoint.

Whipple and Franz,⁷ in a very extensive review of the literature, added six cases of their own in which eight tumors were removed. In one of their cases, they reoperated on account of persisting symptoms and found and removed a second tumor. Their summary of the literature was as follows:

1. Cases with tumors found at operation.....	21
(1 carcinoma with metastasis)	
2. Cases found at autopsy.....	10
Total cases with tumors.....	31
Cases explored and no tumor found:	
Normal Pancreas	10
Pancreatitis	3
Hypoplasia (?).....	1
Hypertrophy	1
Tumor at autopsy.....	1
Cases with autopsy no tumor found.....	3
All showed hypertrophy	—
Total cases without tumor.....	19
Cases with tumor without recorded hypoglycemia	31
Total cases with tumor.....	62

Technic.—Either a left rectus or a transverse incision is made. The gastrocolic omentum is divided between clamps, the stomach retracted

upwards and the colon downwards. With good exposure and blunt dissection, the entire pancreas is visualized. If an adenoma is present, it is easily shelled out and the cavity obliterated and the remaining portion of the gland searched for additional tumors. If no adenoma is present, the only other possible means of affording relief is by a removal of about two-thirds or three-quarters of the pancreas. Holman of San Francisco has advised the removal of the spleen to facilitate the elevation of the tail of the pancreas and control of the blood supply. This, however, is hardly necessary in a thin patient when with good exposure, careful separation of the tail with clamping of vessels before their division gives the operator control of the situation. Dissection must be carried out until just a small portion of the head in the curve of the duodenum remains. Division of the organ between clamps completes the removal. The stump is touched with cautery and closed with chromic catgut or fine silk and covered with fat or posterior peritoneum if it can be picked up. A drain is inserted and stitched down to the stump and the wound closed. There may be some drainage for a time and in some of the reported cases, a pancreatic fistula persisted for a short period.

Results.—Good results have been reported when a tumor was found and removed. This usually constitutes a cure.

When no tumor has been present and a resection of the pancreas has been done the results have not been very successful. In reviewing the literature, one is impressed by the possibility that often too small a portion of the pancreas has been resected. When fifty or more grams of tissue have been removed the best results have been obtained. The microscopic examination of the pancreas removed has consistently failed to show any pathological changes and it would be very difficult to estimate the number of Islands of Langerhans in a given section and to state whether there is an actual increase in their number. The fact that clinical improvement has followed, seems to point definitely to the fact that a causal relationship must exist. As to the permanency of the results from resection, time alone will tell. Judd felt that there was something more in these cases than the pancreas that was involved, probably the liver, even though post-mortems have failed to disclose any gross abnormality in this organ.

Case 1.—The patient, a nurse, aged thirty, had always experienced good health. Five years previous, an appendectomy was done for chronic appendicitis. On August 8, 1934, while on duty as supervisor in a local hospital, she became unconscious and remained so for twelve hours and when she regained consciousness, she complained of diplopia and was somewhat confused. She had one or two similar but less severe attacks after this and various diagnoses had been made. She was referred to us with a diagnosis of menstrual disturbances with physic manifestations. She informed us that her attacks occurred about one week before onset of her menses and that she had been on various thyroid, pituitary and ovarian compounds with no relief. She was seen on the evening of March 21, 1935. Her parents stated that she complained of double vision while eating her evening meal. About ten minutes after this, she became irrational and later unconscious and extremely restless. She was threshing around in bed and it was necessary to restrain her. She did not recognize anyone of her immediate family. Following admission to the hospital that same evening, 1000 c.c. of 10 per cent glucose was given intravenously and this was followed by a gradual return to consciousness and rational speech. The physical and neurological examination was essentially negative. The blood pressure, hemoglobin, urine, leukocyte and serologic tests were normal. An x-ray of the skull showed no evidence of sella turica changes. A non-fasting blood sugar, taken eight hours after the intravenous injection was 80 mg. per 100 c.c. of blood. Because of the almost immediate recovery following the glucose injection, a diagnosis of hyperinsulinism was made and we advised the patient to take large amounts of carbohydrates between her meals after she returned to her home.

The patient returned to her work as a nurse and got along very well for two or three weeks, taking sugar and orange juice every four hours. One night, while on duty in the hospital, she did not eat the usual amount of food and about one hour after the lunch time, her speech became somewhat slurred in character and diplopia developed. The house physician administered 20 c.c. of 50 per cent glucose intravenously with little or no effect, but when 30 c.c. of the same solution was given one half hour later, she immediately fell asleep and slept soundly all night. When seen the following morning, she had no complaints whatever, but was sent home and advised to remain in bed. Three hours later, before taking any more food, another but more severe attack started and the patient was again hospitalized. On arrival at the hospital she was in a very deep stupor and could not be aroused. She responded to sound and touch by only slight facial movements. The pupillary and corneal reflexes were normal while the abdominal were absent. Glucose was again given in 50 per cent concentration intravenously and again she responded by becoming restless and gradually recovered consciousness, again with diplopia and disorientation. The following morning, a glucose tolerance test was performed which gave the following result:

	mg. per 100 c.c.
Fasting	100
½ hour	151
1 hour	130
2 hours	139
3 hours	80

We did not attribute any significance to the test because of the large amounts of glucose the patient had received for twelve hours previous. The patient continued taking orange juice, etc., between meals and was able to remain at work for five months.

Another series of attacks came on in October 1935. At this time, we again performed a glucose tolerance test, this time without the administration of sugar for several hours previous. The readings were as follows:

	mg. per 100 c.c.
Fasting	76
½ hour	115
2 hours	136
3 hours	55

At the end of three hours, the patient was becoming irrational and restless and had to be restrained, necessitating the giving of more sugar. In view of the above findings, operation was advised. No tumor of the pancreas was found so over three-fourths of the pancreas (54 grams) was removed.

Each day for two weeks following the operation, the blood sugar readings were made. The lowest reading was 110 mgs., and the highest 180 mgs. About four months after surgery, the last glucose tolerance test was done. The result was as follows:

	mg. per 100 c.c.
Fasting	94
½ hour	166
1 hour	190
2 hours	155
3 hours	120

The patient returned to her nursing which consisted of a twelve hour night shift and after a time she began losing in weight. One night, she became exhausted and fainted. She later went back to work only to lose her position. She became very unhappy and worried so much that she was unable to sleep. She became very despondent and tried to commit suicide. She failed in the attempt, and, since then, has been working steadily and is feeling very well. Repeated fasting blood sugars have been normal.

(I am indebted to Doctor Joseph Ryan for the medical care and supervision of this case.)

Curiously enough, the first patient on whom Finney resected a portion of the pancreas committed suicide two years after the operation, while apparently in good health.

Case 2.—For two or three years previous to admission to the hospital, this young woman of thirty-five complained of excessive fatigue before breakfast each morning. This became gradually worse until she could barely awaken in the morning. She observed that by taking her breakfast in bed, these symptoms completely disappeared. While in the hospital, all food was withheld for a few hours and she had one of her typical attacks of unconsciousness. A blood sugar taken at that time was 40 mg. per 100 c.c. She was placed on a high carbohydrate diet and advised to take orange juice between her meals and at midnight. She sets the

alarm for two different times at night, being awakened to take sugar, and has been unable to go any night without this routine. She has had no further attacks.

Case 3.—A white man, aged twenty-one, entered the hospital following an automobile accident two hours before. He had fallen asleep while driving his car. Questioning him later, he disclosed the fact that he often became excessively tired and sleepy during the day, especially when hungry. He was advised to take orange juice between his meals. His symptoms have disappeared completely. A blood sugar was never taken on this patient during an attack. However, a non-fasting blood sugar was 80 mg. per 100 c.c. of blood.

We have seen a number of additional patients with hypoglycemia who develop symptoms of weakness, loss of strength and fatigue until the

next meal is obtained. Their blood sugars taken at various intervals while fasting have been from 60 to 70 mgs. Having these patients adjust their diets to the metabolic requirements has taken care of this class of cases very well.

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HEMORRHOIDECTOMY: A PLASTIC OPERATION*

NEWTON D. SMITH, M.D.

Rochester, Minnesota

THE surgical treatment of hemorrhoids has been a subject of universal interest for ages and many different technics have been evolved and offered as the solution of this problem. The types of operations described vary so remarkably in their aims and in the methods of accomplishing these aims that it seems not unfair to conclude that no one technic has proved satisfactory in the hands of the majority of surgeons even though it may have been adequate in accomplishing the results desired by its sponsor. The number of surgical methods which have been suggested to insure satisfactory results and the variety of these methods must confuse rather than clarify the understanding of the physician who does not devote the major portion of his time and effort to the correction of anorectal diseases. The purpose of this paper is not to criticize specifically any of the existing methods, nor to assume to suggest a technic to supersede the methods now in use, but rather to suggest an approach to the problem of the surgical removal of hemorrhoids and to call attention to some pertinent facts that are frequently overlooked.

An ideal hemorrhoidectomy is one which provides for the thorough removal of the groups

of varicose veins underlying the mucous membrane of the distal portion of the rectum and the skin of the anal canal or perianal region and which produces a satisfactory functional result with a minimal deformity. This should be realized with as little discomfort for the patient as is possible and with the fewest postoperative complications.

It is not difficult to imagine the surgeon who, armed with a single technic or method, finds that the hemorrhoids he is about to remove do not conform to the requirements of that type of operation which he intends to perform. This occurrence is not impossible because a careful study of the size, situation and complications of internal and external hemorrhoids will reveal that these factors are extremely variable and that a surgical procedure which will prove ideal in the presence of three distinct hemorrhoids in the classic situations will fail dismally should the whole anal circumference be involved. If scar tissue is present as a result of a previous operation or a healed inflammatory process, or if an anal fissure or a fistula-in-ano is present, then a single method will fall short of its goal or only partially solve the surgical problem. With such a problem to solve, how should the surgeon proceed? The solution seems to lie not in any one method but in the use of the appropriate portions of several methods which will provide sufficient

*From the Section on Proctology, The Mayo Clinic, Rochester, Minnesota. Read before the meeting of the Northern Minnesota Medical Association, Fergus Falls, Minnesota, September 1, 1936.

flexibility to solve the problem. The answer would seem to suggest that each hemorrhoidectomy be studied as a distinct surgical problem based on the principles of plastic surgery with recognizable limitations and with tissues possessing peculiar anatomic and physiologic characteristics.

The response of the anorectal tissues to slight injury or unnecessary engorgement with blood is peculiar and this is especially true in the presence of internal and external hemorrhoids. This response is probably so generally recognized that but passing mention need be made of it. Edema, thromboses and exaggeration of the hemorrhoidal masses almost instantly follow slight injury to the part and follow undue engorgement with slightly less rapidity. The choice of anesthetic and the position of the patient during the operation will do much to avoid these two pitfalls. The anesthesia should be such that it will provide maximal relaxation and obviate the necessity of dilating the anus; it should be ample for the operation with a minimum of risk to the patient. In our experience at the clinic, sacral block anesthesia has fulfilled these requirements very satisfactorily. The prone ventral position with hips slightly elevated has also proved of distinct advantage in avoiding undue engorgement and affording much better exposure than the lithotomy position or the left Sim's position, although the latter does not cause the varicosities to become unduly distended.

One of the outstanding limitations which must be considered and which dictates to some extent the type of wounds which must result is the fact that the operative field is not sterile and that any attempted sterilization produces such transient results that the effort is futile. At the present time only momentary sterilization can be obtained and that at the cost of unnecessary injury and irritation. Granting this fact, only the simplest preoperative preparation seems indicated to insure merely the cleanliness of the rectum and the anus. The realization of this fact also dictates that one should emphasize the following which are applicable to nonsterile fields: (1) cleanliness, (2) surgical provision for drainage of the resulting wounds, (3) avoidance of unnecessary injury, and (4) removal of any tissue which may slough postoperatively unless that tissue is required temporarily for the performance of some important function in the

restoration of normal contour. The postoperative care of the resulting wounds is also dependent on the realization of this limitation and it would seem mandatory that frequent careful observation, gentle thorough cleansing, the application of non-irritating antiseptics, and the generous application of heat form the basis of such treatment.

The normal flexibility and mobility of the rectal mucous membrane and of the anal and perianal skin provide unusual opportunities for variation in the method of removing the hemorrhoidal plexes. This fact would seem to compensate, somewhat, for the multiplicity of the variations which occur in the size, situation, and complications of the internal and external hemorrhoids. It has been stated factually that there are three groups of hemorrhoids and that these occur in the right posterior, right anterior and the left sides of the anus. This may be basically true but the exceptions occur with such frequency that the fact proves to be of little actual value in practical application. To be armed with a technic which is based on the assumption of this distribution leaves much to be desired. The clamp and cautery operation, much praised and much criticized, is a very good example of a method which may be applied in those cases in which there are three typical hemorrhoids but which lacks flexibility to such a marked degree that should the hemorrhoids be very large, should they occur in more than three groups, or should half or more of the circumference of the anus be involved with hemorrhoidal tissue, this type of operation would prove inadequate. The surgeon is compelled to remove only a portion of the abnormal tissue and the result is usually characterized by considerable distortion and the definite likelihood of early recurrence.

The use of a suture or sutures to insure hemostasis and to restore the normal relationship of the rectal mucous membrane and anal skin at the level of the dentate margin provides the desirable flexibility of application sufficient to permit of the thorough removal of the hemorrhoidal tissue with the accuracy of a carefully accomplished anatomic dissection and with the restoration of normal relationship and function which is the object of the plastic surgeon. Such a method must be based on the judicious use of the advantages afforded by the mobility of the skin and the mucous membrane. The external sphincter

muscle also provides a landmark that is invaluable. The exposure of its fibers in the removal of external hemorrhoids is the assurance that the varicosities have been thoroughly removed and its proximal fibers provide a suitable anatomic indicator for the level of the dentate margin as well as providing a tissue suitable for the anchoring of the edge of the mucosa resulting from the removal of the internal hemorrhoid.

Whether a clamp is used to assist in the retraction and manipulation of the mucous membrane for the insertion of the suture is of little practical importance since such a clamp can be very narrow, unlike the necessarily broad clamp that must be used in the classic clamp and cautery operation. A narrow clamp will permit the use of multiple methods at numerous angles, which will meet the circumstances of the individual case.

The discreet use of suture material does not add materially to the postoperative discomfort of the patient and does not increase the incidence of postoperative complications. The discreet use of suture material suggests the use of a minimal amount of such material and also suggests that the stitches should not be placed too deeply. The necessary knots should be so placed that they will not irritate the surface of the open wound unless the exigencies of the case make this unavoidable.

It is true that to apply a single definite technic of ligation and excision may prove as limiting in its result as is the clamp and cautery but to use it in an unlimited manner as suggested permits enough latitude to allow the actual performance of a plastic operation rather than just a plain hemorrhoidectomy. Instead of permitting the denuded surface that results from the removal of the internal hemorrhoids to heal by granulation and epithelialization, or instead of pinching a quarter of the anal circumference into a smaller portion by the use of the clamp, it is possible to withdraw the edge of the mucosa distally and suture it to the proximal fibers of the external sphincter circumferentially, thus insuring a large anal diameter instead of causing deliberate mechanical constriction of the lumen. It is interesting that this will also do much to accomplish the desired hemostasis since the most active bleeding usually occurs from the cut edge of the mucous membrane. In using the clamp to assist in placing the suture above the internal

hemorrhoid, it is possible to take advantage of the fact that the excision of the hemorrhoid produces potentially a "V" shaped wound in the mucous membrane with the suture at the apex. Drawing the angle of the wound distally and spreading the sides of the wound and then suturing them into the proximal fibers of the sphincter will help to overcome the natural constriction caused by the action of the clamp and the suture when it is desired to insure ample anal lumen or when the amount of tissue to be removed causes the surgeon to fear postoperative constriction of the anal canal.

If one recognizes that the operative field is not sterile at the time of the operation, it is advisable to permit ample and free drainage of the wounds. This is best provided by allowing the sulcus formed by the excision of the external hemorrhoid to persist without attempting to close it. The edges of the sulcus can be readily approximated and it is a temptation to try to suture them so as to obtain primary union, but it has been generally recognized that, with but few exceptions, such an attempt will only increase the postoperative discomfort and complications and it will not hasten the healing of the wound. If the sulcus is unusually wide it is sometimes advisable to place one or two sutures in the margin of the skin, and to draw the edge of the wound toward the center of the sulcus and suture it to the base of the sulcus. If properly done, this will frequently help to control the bleeding from this portion of the wound and may help to prevent formation of tags.

The width of the sulcus in the skin is usually determined by the amount of hemorrhoidal tissue underlying the skin and if the surgeon desires to remove these hemorrhoids completely, he must remove the skin covering these varices. Several attempts have been made to provide a method of destroying the subcutaneous varices but the application of such methods proves successful in but a few cases, and more frequently than not produces external tags which, to the patient, are as troublesome as were the original hemorrhoids. One method of removing external hemorrhoids without providing sulci for drainage is the Whitehead operation, but the result of such an operation has little to recommend its general use. In this type of operation the mucous membrane is drawn through the anal canal and sutured to the margin of the skin resulting from

the annular excision of the external hemorrhoids, the dentate margin having been ignored during the excision or attempted restoration of the tissues. A moist, irritating, bleeding ectropion of the rectal mucosa is the undesirable result and not infrequently there is some degree of rectal incontinence.

The fear of postoperative constriction seems to be the paramount reason for the reluctance displayed in removing external hemorrhoids sufficiently wide so as to produce a total cure. If the wounds are improperly treated postoperatively, or if such treatment is entirely neglected, this reluctance may be justified. If the wound is treated as a soiled or infected surgical wound, however, there is little ground for this fear.

The solution of the proper method of remov-

ing hemorrhoids in any given case probably lies not in the application of the one suitable method as much as it does in the appropriation of portions of several methods to form a composite operation based on the plastic needs of the patient. Understanding the anatomy of the part and bending it to the needs of the operator is of extreme importance. Recognition of the limitations and the peculiarities in the response of the tissues being dealt with will do much to assist in deciding on the type of operation as well as the preoperative and postoperative management. It would seem that to approach a hemorrhoidectomy as a plastic operation would do much to encourage the understanding of the problem and to indicate the solution of each case that might otherwise seem unduly perplexing.

A PROPOSED NEW DIAGNOSTIC TEST FOR PERIPHERAL ARTERIAL INSUFFICIENCY

GARDNER S. REYNOLDS, M.D.

Ah-Gwah-Ching, Minnesota

IN OCTOBER, 1927, and again in August, 1928, Binger and Christie^{1,2} published observations concerning pulmonary circulation under the influence of diathermy. They found that when diathermy is applied to the lung, the occlusion of the pulmonary artery produces an immediate rise of temperature within the lung, whereas occlusion of the bronchi has no effect upon lung temperature. Consequently, they concluded that heat produced in the lung by pulmonary diathermy is carried off by the circulation.

Based upon this premise, it was thought that by inducing a measured amount of diathermic heat in an extremity, an estimate could be made of the ability of the peripheral arterial system to dilate and carry it off. It was assumed that, rather than to permit an unusual temperature to develop within an extremity, the local arterial system would dilate to the maximum of its capacity in an effort to remove the excessive heat. Such a test as the one proposed might be regarded as a means of obtaining a clinical conception of the peripheral arterial dilatability. By no means can it, as yet, be considered an exact, laboratory-type of test. Then, too, clinical evaluation of the test would require modification by

such factors as abnormalities in the size of the extremity tested, age of the patient, and such other factors as might influence the test. Finally it was apparent that no such test could be used in the presence of venous insufficiency.

Guided by the initial premise as stated and the other factors enumerated, extensive experiments were undertaken with diathermy equipment to determine what characteristics of capacity, frequency and voltage were most suitable for clinical use. Since the work is new in some respects at least, reference to the literature in the usual manner was impossible; however, in time, the following technic was evolved:

The patient is seated in a comfortable wooden chair with the feet extended beyond a 90° angle. Both feet are placed in contact with soaped metallic plates which are well insulated from the floor. It is immaterial whether cast foot plates or block tin is used. These foot plates are in turn connected with the diathermy machine by well insulated cords. Perfect insulation is necessary since some machines will show considerable leakage unless the cords are unusually well protected. An important feature of the test consists in the proper insulation of the heel and longitudinal arch by means of a folded towel or other

insulating material. This insulation must extend up to the transverse arch. If this is neglected, the current follows the path of lesser resistance along the Achilles tendon. When the current follows this path, local burns may be produced.

With the apparatus thus correctly adjusted, the current should be turned on very slowly and increased gradually for the forty-five + —minute period of the test. Care must be taken not to exceed the tolerance of the extremity during the early part of the test. In this respect, clinical experience with the test is of considerable aid in estimating the rapidity with which the current may be increased. The history and physical findings are also of great value in such an estimation.

It is highly desirable to evaluate the reaction of the extremity in the early minutes of the test since the limb should be able to tolerate the maximum current for the final fifteen minutes. If this final tolerance is not experienced, the test should be repeated at a later date. However, if a satisfactory estimation of the condition of the arterial circulation is not obtained during the forty-five minutes of the test, it should not be repeated for several days, as the vasodilator nerves of the tested extremity may be exhausted.

When overheating occurs, it is indicated by the presence of cramps in the muscles of the tested limb, by redness, and by palpatory increase of temperature. Such cramps are similar to those occurring in intermittent claudication. The basic etiology of the two is similar, consisting of an arterial blood supply inadequate to meet the demands required of it.

The tolerance of an average-sized upper extremity with a normal arterial system has been found by observation to be 200 milliamperes. That of an average, normal, lower extremity is 600 milliamperes. As previously stated, a normal extremity will tolerate its proper amount of current for at least fifteen minutes without developing cramps and without showing an appreciable palpatory change of temperature.

In general, it has been noted that arterial insufficiency due to spasm will show complete dilatation and will give a normal response when a normal diathermic heat load is applied. That is,

no muscular cramps or elevation of temperature will be found when the tested limb is affected by arterial insufficiency due to spasm. On the other hand, when the peripheral arterial system of the tested member is affected by organic obstructive lesions, a subnormal tolerance will be found without any evidence of an increasing tolerance or dilatability during the test.

Consequently, through use of this test, the following differentiation is apparent: pure vasospastic disease is indicated by the usual history of blanching of the skin, coldness of the extremities, paresthesias, decreased capillary bed circulation and by a normal diathermic tolerance test. Organic obstructive lesions of the peripheral arterial circulation show the classic findings of coldness, intermittent claudication or even gangrene and a diminished diathermic tolerance test. Conspicuous overheating of the fingers or toes of the limb being tested apparently denotes an organic obstructive lesion of the arterioles, while a general overheating of the entire extremity indicates a similar lesion of the larger arteries. Also, overheating of localized areas other than the ankle or wrist indicates an organic obstructive lesion of a branch artery. Through the observations made thus far, these facts appear to be well substantiated, yet it is felt that further proof is necessary to establish them definitely.

Prognostically, also, this test might prove of significance. Past experience indicates that amputation is necessary when the diathermic test shows a tolerance of 35 per cent or less of normal. The only exception is found when the tolerance can be rapidly raised by diathermic treatment to 40 per cent or more of normal.

The investigations on which this paper is based have extended over a period of eight years. Much clinical and experimental evidence has accumulated over this period. This paper, then, constitutes only a preliminary report. It is hoped that further proof of opinions and facts herein stated can be arranged for publication in the near future.

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FRACTURE OF THE OS CALCIS*

Apparatus for Traction

WALTER WILLARD NAUTH, M.D.

Winona, Minnesota

IT IS generally conceded that fractures of the os calcis without proper reduction will result in a rather painful and permanent disability. Prolonged disability where compensation is a factor has more forcibly impressed the industrial surgeon with the seriousness of this type of fracture.

Flattening of the normal longitudinal arch due to

will not vary. The fracture is fixed more solidly than in a plaster molded cast.

Technic in the use of the apparatus is as follows: Since there occurs a broadening of the os calcis due to a longitudinal fracture, a Böhler clamp is first applied rapidly and with considerable force until a crunching sensation is felt or heard.

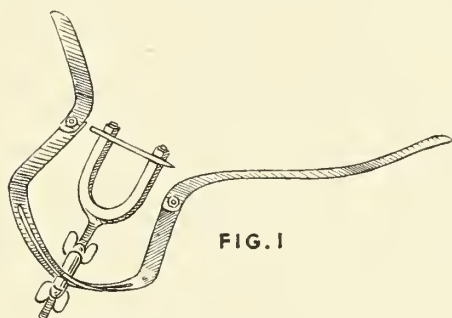


FIG. 1

narrowing of Böhler's angle which is normally about 30 degrees, will result in displacement upward and forward of the tuberosity of the os calcis due to the powerful pull of the tendon achilles. This displacement can be corrected by traction in the opposite direction.

The usual method employed in these cases is to put the patient to bed with the leg on a suspension splint, and to apply traction by means of weights attached to a Steinman pin thrust through the os calcis. Since a large percentage of fractures of the os calcis result in an upward and forward displacement, coupled with a telescopic impaction, a shortening of the long axis of the bone is produced. Traction in this type of fracture is frequently necessary.

The apparatus I have devised and used successfully, as here described and illustrated, has numerous advantages over the Böhler traction method.

It consists of three pieces of light band-iron and a traction yoke, (Fig. 1). The slotted arch pivotally bolted to the ends of the plantar shaped and calf shaped pieces of band-iron respectively, permits lateral deviation. The swiveled horse-shoe shaped yoke with its threaded elongation placed through the slotted arch of the iron band permits radial traction in the direction of the long axis of the bone, as it is moved along the slotted arch (Fig. 2). Thumb screws, one on each side of the slotted arch, provide both traction and the means for securely locking the traction yoke at the desired angle. Once the fracture is satisfactorily reduced, and the apparatus applied, amount and direction of traction

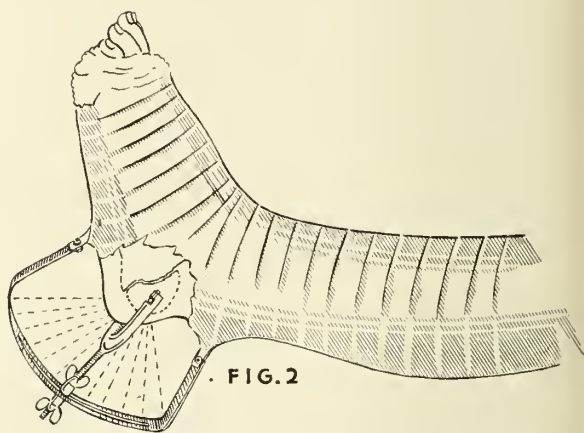


FIG. 2

The point of Steinman pin is next fixed in and at right angles to the lateral surface of the bone at a point predetermined from the original x-ray for the most advantageous angle of traction.

Another picture is now taken with the tube directed through the long axis of the pin. If the pin is not in the proper position it can be changed before directing it through the bone. Entrance and exit of the pin is covered by sterile dressings. This is followed by a light wrapping of cotton and a light plaster cast extending from the toes to a point below the knee leaving free a large portion of the heel.

The swiveled horse-shoe shaped yoke of proper width is next fixed to the Steinman pin and the threaded extension put through the slotted band-iron which band-iron is then incorporated in the first cast by another wrapping of plaster. After the cast is dry enough, traction is applied with the thumb screws and another x-ray is taken to determine direction of traction which if not correct can be changed radially as well as laterally at will. The yoke is then permanently locked by the thumb screws on either side of the slotted arch.

Advantages of the apparatus are: early ambulation on crutches, a shorter period of hospitalization (usually about three days), variable directional traction with selective position and rigid fixation.

*From the Winona Clinic, Winona, Minnesota.

CASE REPORT

THE GASTRIC ANTI-ANEMIC FACTOR IN SUBACUTE COMBINED SCLEROSIS*

JOHN FRANCIS BRIGGS, M.D.

Assistant in Medicine, University of Minnesota
and

HARRY OERTING, M.D.

Assistant Professor of Medicine, University of Minnesota
Saint Paul

THE close relationship that exists between subacute combined sclerosis and pernicious anemia suggests that the two diseases are the result of a common etiologic agent. There is no direct evidence to indicate that such a condition actually exists and, indeed, one can find much to suggest that this relationship is more apparent than actual. If, however, the two diseases are related, then the basic etiologic factor should be an alteration in the gastric hematopoietic power, so that in subacute combined sclerosis even with a normal blood picture, we should still find some definite change in the gastric anti-anemic factor; and any alteration in this hematopoietic power could be determined by the method of Castle. Also, symptomatic relief of the neurological symptoms should occur in subacute sclerosis upon anti-anemic therapy if the two diseases are actually the result of one etiologic agent.

The beneficial effect of liver therapy upon the neurologic symptoms of subacute combined sclerosis remains a matter of controversy. No one author believes that there is any change in the pathologic lesions of the cord through the administration of liver, but most authors feel that there is a definite improvement in the neurologic symptoms, even though there is no effect on the neurologic signs as a result of anti-anemic treatment. Thus anti-anemic therapy lends little support to the supposition that pernicious anemia and subacute combined sclerosis are the result of a common etiologic factor.

Very few studies have been done concerning the gastric anti-anemic factor in subacute combined sclerosis. Salus and Reimon² investigated the hematopoietic power in subacute combined sclerosis by the method of Castle and concluded that there was no change in this function. Their material, however, leaves some doubt as to the validity of their conclusions. Palmer¹ in his investigation of one case feels that there is a distinct alteration of gastric hematopoietic power in subacute combined sclerosis, as he was unable to find any continued response with this type of prepared gastric juice in a patient suffering from pernicious anemia. His experiment is particularly valuable in that his patient had a normal blood picture.

We have had one patient suffering from subacute combined sclerosis whose blood picture has never varied

from normal. The gastric juice from this patient was obtained by lavage and prepared by the method of Castle. It was then fed to the patient suffering from pernicious anemia (Mr. S.) with the results noted.

Mr. S., white, male, aged seventy-four, complained of: (1) a tight feeling over the middle of the sternum with choking sensation and dyspnea on exertion; (2) epigastric distress for the past year, usually relieved by food; (3) weakness and drowsiness for the past year; (4) enlargement of abdomen the past year; (5) constipation for the past six months; (6) swelling of the ankles the past year. In 1927 the patient developed arthritis and was hospitalized elsewhere. In 1928 he began taking some patent medicine for arthritis. He took these pills for about one and one-half years, three times a day and thinks he got some relief. He still has some residual arthritis. About four years ago (in 1930), while at home, he developed a severe pain over the precordium. This pain was so intense that he hoped for death. A physician was called who gave him some medicine for the pain and sent him to the Ancker Hospital the next morning. The pain lasted for about eighteen hours and then disappeared. He has never had a similar attack. About one year ago the patient began to notice attacks of oppression over the middle of the sternum. These attacks were accompanied by dyspnea and a choking sensation, and came on with exertion. There was no radiation of pain. He has also noticed epigastric distress for about one year with a feeling of emptiness in the pit of his stomach which was usually relieved by eating. He has been bringing up slimy material from his stomach for the same length of time. He has noticed drowsiness and weakness for the past year. Occasionally during the past year he has noticed swelling of his ankles. He seems to think that his abdomen has enlarged somewhat in the past year. He does not think he has lost much weight. He has noticed constipation for the past six months. He was sent in to the hospital from the dispensary. His past health has been fine. He had measles when a child.

Past history by systems. Head: Scalp—no abnormalities. No headaches. No vertigo. For the past two years he has noticed spots before his eyes. This is getting worse and seems like a net in front of his eyes. His nose and ears are normal except for some deafness in the right ear. Mouth: no teeth, upper plate. Throat normal. Gastro-intestinal: Appetite poor. No qualitative or quantitative food distress. He has noticed blood in his stools occasionally. Genito urinary; no nocturia, no frequency, no dysuria nor hematuria. Habits: Smokes one pipe a day. Drinks one or two cups of coffee a day. Does not use intoxicating liquors. His weight is 138 pounds.

Marital history: He has been married for twenty years. Wife, aged fifty-four, is living and well. He has no children.

*From the Medical Service at the Ancker Hospital.

CASE REPORT

Blood examination: Cells count 100.

Date	Hgb.	Million RBC	WBC	PMNs	Lymph.	Mono.	Eosin.	Retic.	Baso.	Platelets	Color Index
11-22-34	43%	1.82	12,250	53	32	2	6	..	..	.....	1.6
11-25-34	27%	1.19	3,450	63	29	1	7	..	..	.....	1.1
11-28-34	29%	1.23	4,250	51	40	3	6	..	..	78,000	1.18
11-29-34	27%	1.21	3,050	32	50	4	..	2.2%	..	36,000	1.1
12- 3-34	33%	1.57	6,600	54	36	4	6	2.0%	Pos.	.....	1.05
12- 5-34	28%	1.22	4,950	51	38	3	7	..	1	24,000	1.1
12- 7-34	30%	1.41	7,000	62	30	1	7	..	..	100,000	1.06
12-10-34	29%	1.42	6,900	58	24	6	12	7.0%	..	125,000	1.
12-12-34	35%	1.60	6,550	66	34	1	8	..	..	86,000	1.09
12-14-34	34%	1.38	3,750	65	27	2	6	..	..	88,000	1.2
12-17-34	35%	1.50	3,650	61	30	3	5	9.6%	1	106,000	1.1
12-19-34	37%	1.46	2,750	46	39	5	7	..	3	160,000	1.2
12-21-34	37%	1.56	3,550	62	32	2	3	..	1	80,000	1.1
12-24-34	37%	1.31	3,700	61	58	..	1	..	..	68,000	1.3
12-26-34	35%	1.49	3,850	77	17	4	2	8.0%	..	70,000	1.1
12-28-34	39%	1.44	5,300	50	40	5	4	27.0%	..	124,000	1.3
12-31-34	43%	1.89	6,350	65	25	4	4	..	..	112,000	1.1
1- 5-35	58%	2.05	9,400	71	21	1	3	10.0%	..	228,000	1.4
1-10-35	53%	2.36	6,750	57	36	1	5	..	1	.....	1.1
1-15-35	52%	2.40	10,300	67	22	6	3	..	2	.....	1.1
1-21-35	60%	3.24	6,650	58	39	6	7	..	..	.....	0.92
1-24-35	63%	3.20	6,650	73	25	..	2	..	..	282,000	0.98
1-30-35	78%	4.10	....	..	..	..	..	..	..	.....	0.95

Family history: Father killed in war. Mother died at the age of forty years. He has one brother.

Physical examination revealed a white man, aged seventy-four, fairly well nourished, but appearing pale and anemic. Examination of his head showed the scalp to be normal. Eyes: the pupils were small, equal and regular. They reacted to light and accommodation. The conjunctiva was pale. Examination of the ears showed dried blood in the canal of the left ear. The patient stated that he stuck a razor in there to get the hair out and cut himself. His nose is normal. Examination of the mouth and throat revealed the tonsils to be enlarged. The mucous membrane was pale. The tongue appeared normal and there was no marked atrophy of papilla. Examination of the thyroid showed no enlargement. Cervical and axillary glands were not palpable. A few crepitant râles could be heard in the right lung base posteriorly. The breath sounds were normal. Examination of the heart showed the tones to be distant but normal. No murmurs. The rhythm was regular. His blood pressure was 110 over 60. No masses were palpable on examination of the abdomen, but there was tenderness in the mid epigastrium on palpation. There was slight rigidity. The liver and spleen were not enlarged. He had a right indirect inguinal hernia. Examination of the genitalia showed the left testicle to be atrophic. Rectal examination revealed no masses nor tenderness. Examination of the extremities revealed arthritic deformity in the metacarpophalangeal joints of the right hand with inability to extend the fingers. There was an old injury to the right elbow, with inability to completely extend that elbow. The left leg was discolored from old varicosities. There was moderate edema of both ankles. The knee jerks were normal. Babinski's sign was negative. Deep sensibility was normal.

Impression: Coronary sclerosis with generalized arteriosclerosis and possibly mild decompensation. Pernicious anemia. Possible cancer of the stomach. Hypertrophic arthritis, and right indirect inguinal hernia.

Laboratory work: Urinalysis revealed color, amber; reaction, acid; specific gravity, 1.016; albumin, negative; sugar, negative; hyaline casts, negative; leukocytes, very occasional; erythrocytes, negative.

Gastro-intestinal study showed no abnormalities of the stomach and duodenum. Peristalsis was complete. There was a suggestion of a slight herniation of the cardiac end of the stomach through the esophageal orifice. X-ray of the colon was negative for any evidence of organic pathology. There was considerable

spasticity in the descending and sigmoid portion. Icterus index was 17 per cent.

The electrocardiograph examination was practically normal. X-ray of the heart showed an apparently slight diffuse enlargement. Fluoroscopically there was seen slight pressure on the esophagus by the left auricle, and increased prominence of the ascending aorta was evidently due to torsion of sclerosis rather than appreciable dilatation. Some widening of the heart base, however, was not ruled out. X-ray of the lung revealed a slight generalized increased prominence of lung markings which may represent slight early congestion. There was calcification of the right root.

The prepared gastric juice was fed to the patient from November 25, 1934 until December 24, 1934. During this interval there was no distinct improvement in the patient's clinical condition. On December 26, 1934, normal gastric juice, prepared by the method of Castle was fed to the patient, and from this date until January 30, 1935, the patient made a distinct clinical improvement in his pernicious anemia.

The patient with subacute combined sclerosis has been under observation since then until November 1, 1936, and there is still no alteration in his blood picture. It remains perfectly normal. The patient suffering from pernicious anemia has remained in a state of remission since January 30, 1935, by the use of extralin by mouth.

Conclusions

The gastric juice of a patient suffering from subacute combined sclerosis but with a normal blood picture was investigated for its hematopoietic power by the method of Castle. This prepared gastric juice caused a transitory reticulocyte response but no increase in the various blood constituents. The prepared gastric juice from a normal individual when fed to this pernicious anemia patient alleviated and brought about a remission from the pernicious anemia.

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EDITORIAL

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BUSINESS MANAGER

J. R. BRUCE, Saint Paul

Volume 20 APRIL, 1937 Number 4

Uncover Tuberculosis by Modern Methods

THIS is the slogan of the tenth annual early diagnosis campaign of the National Tuberculosis Association and its units. Starting in April with an intensive educational effort, the tuberculosis associations of the country will build their 1937 educational program around this theme.

A Prussian king is reported to have said three things were needed in waging any war: "Money, money and more money." Today in the fight against tuberculosis we know that three things are needed—education, education and more education. For despite progress made in this campaign, statistics show that eight out of ten patients have reached an advanced stage of tuberculosis before treatment is started.

Just why do people delay? This question was

put to a group of patients in a study by the National Tuberculosis Association and the most common answers were: "Too busy," "lack of funds," "fear of doctors," "fear of losing a job," "fear of being told it was tuberculosis."

Delay in tuberculosis is costly. It may mean death, or at best an exceedingly limited life on recovery-prices that need not be paid if the doctor is given the opportunity to "uncover tuberculosis by modern methods."

A diagnosis delayed until symptoms are complained of, means in many cases a diagnosis made too late. The modern plan is to hunt for the disease before symptoms appear, by the routine examination, including the tuberculin test and x-ray, among all who have had known contact with tuberculosis, of high school and college students and others in the age periods during which the disease is most prevalent.

The physicians of the state are invited to take part in this educational campaign by giving special attention in their medical meetings to the modern methods of uncovering tuberculosis.

By means of radio and other talks, newspaper articles, educational films and the distribution of special literature, public attention at this time is being directed to the modern methods available in discovering tuberculosis early. The Minnesota Public Health Association, the state Christmas Seal organization which is in charge of the state campaign, will send interested physicians samples of the new leaflets, if a request is sent to headquarters at 11 West Summit Avenue, Saint Paul.

Our Council on Pharmacy and Chemistry

AT THE close of the last century physicians were at a loss to know not only the composition of many proprietary and patent medicines, the borderline between which is none too clear cut, but also to know their value medicinally. Many remedies were offered to the profession through the columns of the medical journals without any investigation as to their value. To put therapeutics on a more rational basis so that physicians need not prescribe remedies of

unknown composition or of doubtful value, the national medical organization established in 1905 the Council on Pharmacy and Chemistry whose function it should be to analyze drugs and investigate their therapeutic value. The personnel of the Council was carefully chosen for the most part from the faculties of medical schools so that its deductions would be unbiased and reliable. The members have served in the interest of science and without compensation and the Council has operated at some expense to the profession in the interest of better therapeutics.

The reports of the results of the labor of the Council have appeared periodically in the volume entitled "New and Non-Official Remedies" which includes remedies approved by the Council. In addition, reports of remedies approved and not approved appear constantly in our national journal. The Council has also published a small volume entitled "Epitome of the United States Pharmacopœia and National Formulary" which contains information useful to the profession in these two volumes. Another volume has also been published at intervals since 1913 entitled "Useful Drugs." This small volume was designed to meet the needs of courses in materia medica in medical schools and of state examining boards. Another small volume has also been published jointly by the Council on Pharmacy and Chemistry and by the Council on Medical Education and Hospitals, and is entitled "Hospital Practice for Internes."

All the energies of the Council have, therefore, been directed towards simplifying medication and placing it on a scientific basis. No doctor need be confused by the multitudinous new remedies offered by the detail men from the pharmaceutical houses. He can easily obtain information regarding medication which has been investigated and found to be of value. The trial of every new remedy by the rank and file of the profession is extravagant and needless. The prescription of drugs of unknown composition is inexcusable. Many of the new proprietaries are simply combinations of known drugs. Occasionally a pharmaceutical house will discover a drug of real value and is entitled to the financial compensation resulting therefrom. The Council simply insists that the name applied to such a new remedy shall reflect its composition rather than its use.

Time and time again manufacturers have de-

veloped remedies, of some value, advertised them to the profession and when they became best sellers have directed their advertising to the public. Notable examples are Listerine, Glycothymaline and Fellows Syrup of Hypophosphites. Although such remedies doubtless have some value, their advertising claims have been inexcusable and have fostered self medication.

Our efforts to improve therapeutics by the establishment of the Council met with rather general approval. The most important pharmaceutical houses have coöperated to a considerable degree. All the state medical journals with the exception of the *Illinois Medical Journal* agreed to accept only Council approved articles. Even some of the newspapers have coöperated to the extent of cleaning up their advertising. It is unfortunate that there has not been 100 per cent coöperation on the part of the profession, for the Council on Pharmacy and Chemistry is *our* Council and is working to eliminate secrecy and fraud from therapeutics. The fact that commercial concerns and quacks, although they have challenged the findings of the Council on numerous occasions, have never successfully upheld their accusations in any courts in the land, speaks for the accuracy and thoroughness of its work.

Duluth and the State University

THE present agitation to establish a local division of the University in Duluth has the hearty support of all the profession the writer has been able to contact. We now have a Junior College ably conducted under Dean Chadwick in connection with our largest high school. This space is already inadequate and testifies to the great popularity of the division.

We also have a State Training School for Teachers, the type formerly called Normal School. It has a commanding site and an excellent group of buildings. The plan to combine both of these services in the State owned Teachers' College unit is widely favored. At the present time most teachers have more than "Normal School" credits. There is not the dearth of college graduates that formerly made such Teachers' Training Schools imperative. In fact these units have proceeded to give full college training and degrees. It would be conspicuously easy to make

this indicated merger and it would very greatly extend the opportunities for University enrollment in the third largest city in the state. The saving of expense to local parents would be very great, and many other obvious advantages would accrue. The Junior College enrollment would be very greatly increased at once. Students now taking the first two years given have been accepted widely and none have been reported inadequately prepared when accepted for enrollment in professional schools, or for advanced courses. What reason is there to expect that the full four years' academic work would be done any the less efficiently?

The writer does not desire to enter upon any discussion of the matter of what such splitting up of the University into units might do to the parent institution in Minneapolis. It should never extend to other than the undergraduate or academic schools. The local divisions of the agricultural school have in no way abridged either the position or the dignity of the central school; and its faculty would appear to have, with less strenuous routine, more opportunity for real University effort and research. The respective commercial interests of the various cities (including Duluth) should not be considered as especially weighty arguments.

E. L. T.

Annual State Meeting

THE program of the eighty-fourth annual meeting of our State Medical Association which will be held in Saint Paul next month, appears in this issue. There will be medical, surgical and general sessions with part of Monday afternoon devoted to medical economics, an industrial dinner Tuesday evening, and a Public Health meeting open to the public following the dinner. Wednesday will be entirely devoted to the consideration of injuries. The Congress of Allied Professions which meets Monday at the Lowry Hotel will join us in the evening at the Auditorium.

While most of the program is to be furnished by local talent, a number of out-of-state visitors will add interest to the meeting by their contributions to the economic as well as the scientific aspects of medical practice.

Sunday night the House of Delegates will be

addressed by Dr. Olin West, who always has a message from our parent organization. The Delegates will also hear Dr. Edward Skinner of Kansas City, on Social Security in Missouri. Dr. Skinner is a radiologist of experience and is being brought to the meeting by the Minnesota Radiological Society. In addition to being chairman of his local medical society library committee he is on the editorial board of the *American Journal of Roentgenology and Radium Therapy*. He will also speak on the x-ray of fractures Wednesday.

The Medical Economics meeting, Monday afternoon, will be addressed by Dr. Maxwell Lick, President of the Medical Society of the State of Pennsylvania. His subject is Social Security in Pennsylvania, and he will also speak Wednesday on surgical diagnosis in regions of the abdomen. At this meeting, Monday, will also be heard Dr. Nathan B. Van Etten of New York, who is speaker of the National House of Delegates, and Dr. Morris Fishbein, who is always amusing as well as instructive.

The Industrial Dinner, Tuesday, will replace the usual banquet and following the dinner, Governor Benson will welcome visitors. Dr. Adson will give his presidential address, and Mr. Voyta Wrabetz of Milwaukee, who is a lawyer and has been a member of the Wisconsin State Industrial Commission for the past ten years, will speak on coöperation between physicians and commissioners.

The Public Health meeting, Tuesday evening, will be open to the public. Among those who will address this meeting will be the Reverend Alphonse M. Schwitalla, Dean of the St. Louis School of Medicine, President of the Catholic Hospital Association, Editor of *Hospital Progress*, and Professor of Biology at St. Louis University. Dr. Van Etten will also speak, and Dr. R. G. Vonderlehr, Assistant Surgeon General of the U. S. Public Health Service and in charge of its Division of Venereal Diseases, will speak on the present campaign for the control of syphilis. The meeting will be closed with an address on Quacks of the Year, by Dr. Fishbein.

The Northern Minnesota Medical Association is sponsoring two visitors this year. One is Dr. Francis D. Murphy of Milwaukee, who is Professor of Medicine at Marquette University and who will speak on Hypertensive Heart

Disease. The other is Dr. John M. Wheeler of New York, Professor of Ophthalmology at Columbia University and director of the eye service at Presbyterian Hospital since 1928.

Another speaker on Wednesday will be Dr. Michael L. Mason, Assistant Professor of Surgery at Northwestern University. He has been associated with Dr. Allen B. Kanaval and Dr. Sumner L. Koch since 1926 and will discuss hand infections.

High voltage x-ray in the treatment of cancer is at present in the limelight. Dr. Robert Stone of San Francisco who spent some time in research in anatomy at Peking Union Medical College before specializing in x-ray, will speak on the possibilities of this new form of treatment of cancer.

It will be seen that the program committee has prepared a treat for the members of the Association. The meeting should add new stimulus to members and they are urged to bring their wives to share in the entertainment to be provided by the Women's Auxiliary.

In Memoriam

Carl William Forsberg
1897-1937

DR. CARL W. FORSBERG, Minneapolis, died at the University Hospital, February 21, 1937, at the age of thirty-nine. He had been in poor health for three years.

Dr. Forsberg was born July 13, 1897, in Saint Paul. He received his M.D. degree at the University of Minnesota in 1923 and took a six months' internship at the Western Pennsylvania Hospital beginning in July, 1922, and another six months at the Grasslands Hospital in Valhalla, New York. He entered private practice at Oconomowoc, Wisconsin, in July, 1923, before entering the Mayo Foundation in January, 1924, for two years as a fellow in surgery.

In January, 1926, Dr. Forsberg became associated with the Sioux Falls Medical and Surgical Clinic, in Sioux Falls, South Dakota. In 1933 he became a graduate student in the pathology department of the University of Minnesota and became an instructor in that department. He passed preliminary examinations for a Ph.D. degree last December.

Dr. Forsberg married Cora L. Lokensgard on December 8, 1928. He is survived by his wife; a daughter, Beverly Jean; a son, Richard William; a sister, Myrtle Forsberg of Charleston, Iowa, and a brother, Elmer J. Forsberg, of Saint Paul.

Carl G. Kroning
1905-1937

DR. CARL G. KRONING, a native of St. Charles, Minnesota, and who began practice there in April 1933, died suddenly on February 22, 1937. He was born December 14, 1905, in St. Charles. High blood pressure caused the finishing of his career at the early age of thirty-one.

Graduating in 1923 from the St. Charles high school where he was prominent in athletics, Dr. Kroning worked in a local drug store until he entered the University of Minnesota medical school in 1926. Receiving his medical degree in 1932, he spent a year as interne at St. Mary's Hospital, Duluth, and then began practice at St. Charles in association with Dr. F. H. Rollins.

Dr. Kroning was a member of the St. Charles Masonic Chapter and of the Berea Moravian Church and was active in civic enterprise, having been largely responsible for the organization of the Junior Chamber of Commerce of St. Charles. He was a member of the Winona County Medical Society and the Minnesota State and American Medical Associations.

Dr. Kroning is survived by his mother, Mrs. H. G. Kroning; three sisters—Nora of Washington, D. C., Ruth (Mrs. Leonard Happel) of La Crosse, Wisconsin, and Clara of Minneapolis; three brothers—Clarence of Minneapolis, Hubert of Sandstone, and Walter of St. Charles.

A strong rugged character, gone with the ebbing tide. Long shall we cherish his memory

FREDERICK H. ROLLINS, M.D.

Protamine and Insulin Preparations

From its introduction fourteen years ago, insulin underwent relatively little modification until Hagedorn and others of Denmark showed that the blood-sugar-lowering action of insulin was prolonged when it was combined with protamine. Subsequently, Scott and Fisher, working at the University of Toronto, found that the addition of a zinc salt to a protamine and insulin mixture enhanced the prolongation effect of insulin in diabetic patients. Various investigators in collaboration with the University of Toronto group have aided in the development of a pharmaceutically improved product of insulin, modified by the presence of protamine and zinc, which may be dispensed in a single vial. This product has now been designated "Protamine Zinc Insulin." Protamine Zinc Insulin does not replace insulin (unmodified) in all cases or under all circumstances. Protamine Zinc Insulin may be used alone or used concurrently with the administration of unmodified insulin; or in some cases unmodified insulin may be used to advantage without employing Protamine Zinc Insulin. For the sake of consistency in nomenclature and to avoid confusion in medical literature, physicians and investigators should bear in mind distinctions between the following terms: Insulin as a term for the unmodified insulin of commerce. Protamine Insulin as a product to which no zinc salt has been added. Protamine Zinc Insulin for the product modified by the addition of protamine and a zinc salt, with other substances. (J. A. M. A., Feb. 20, 1937, p. 644.)

It is said that 300,000 goats per year are required to furnish the mohair needed annually by the automobile industry.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

County Officers Meet

County Committees of Three

One of the high points of the County Officers' conference was the emphatic endorsement given to the work of the County Committees of Three.

These committees were organized originally to work with SERA organizations in each county. They were to advise with relief workers about medical relief problems, iron out difficulties.

That the functions of alert committees have enlarged considerably since the early days of SERA coöperation is clear from the report made by Dr. A. H. Zachman at the morning session of the conference.

The County Committee of Three is now in a position to be the connecting link between the physicians and every welfare activity in the community. It is or may be the means by which physicians assist and guide and coöperate in every community undertaking.

They Promote Goodwill

"There is only one legitimate way for doctors to advertise themselves in their own communities; that is by making themselves and their objectives known to the officials, to representatives in the legislature, to the welfare workers. The best way to do that is through the Contact Committees. These committees were organized to protect the doctors' interest, of course. But they are also ready at hand to extend the doctors' services; to make it possible for doctors to take an active part in the welfare work of the community, to promote goodwill."

Many Are Active

Unfortunately, not all committees function according to Dr. Zachman's plan for them. A good many function sluggishly and a few are inactive altogether. But the majority have some real accomplishments to their credit and there should no longer be any doubt in the minds of

anybody as to the value, not only to the practicing physicians, but to the public, of the official participation of representatives of Organized Medicine in welfare and Social Security programs.

Varied Program

Dr. Zachman's discussion of the Committees of Three was one phase of a many-sided program designed to help hard-pressed officers of medical societies to meet the confused and ever-changing situations that confront them in all their relations with the world at large, as well as to assist them with their individual society programs.

The justice of the frequently repeated truth that no hard and fast rules governing immunization can be made that will be satisfactory for all localities was re-emphasized at the breakfast round tables.

Immunization

Where one county society prefers to give immunizations and even vaccinations at the school houses, another is convinced of the superiority of a system which calls for all service to be done in the doctor's office.

By the same token, the amounts of fees vary with each community and so do the arrangements made to take care of the children whose parents are unable to pay any fee. In one case reported at the breakfast, a modest charge of 50 cents was made for vaccination and Red Cross funds were drawn upon to pay for vaccinations of those who could not pay their own. A definite week was set aside for the work; all the physicians participated. Dues of all members were paid to the state society out of the proceeds and the remainder was divided among the physicians.

Relations Improve

Comparison with similar discussions in former years indicated a decided improvement in relations between medical officials and the welfare authorities of their localities.

Gradually but steadily, arrangements for care of the indigent are improving in most parts of the state. There are sections, furthermore, where arrangements and relations are entirely satisfactory to physicians.

Breakfast discussions were occupied to a considerable extent with these matters but not exclusively. There was the matter of membership to occupy many of the county secretaries.

"Do Not Be Hasty"

An interesting warning about membership was issued from the floor. It was to this effect: Do not be too hasty in refusing membership to what may appear to be an unpromising candidate. In some authenticated cases an undesirable candidate for membership has developed, within the membership of his county society, into an ethical practitioner and an entirely satisfactory member of the society.

It was suggested in a district which has tried it and knows that a well arranged, well promoted "medical economics" meeting, so-called, is an excellent means of extending membership and of keeping the interest and activity of all members.

Following are brief excerpts of what speakers on the formal morning and afternoon programs had to say:

Choice for the Industrial Worker

P. C. LECK, M.D., Austin

In Mower County last year the physicians stood firm in refusal of the county contract for care of the indigent. County commissioners refused to consider medical care on a fee basis and hired an outside physician to come in at a salary, in defiance of local men.

Next month the contract comes up for renewal. It seems probable that the county commissioners will see the matter differently than they did a year ago. The "strike breaker," so-called, has not proved wholly satisfactory even to those who brought him into the county.

There is a grave threat to private medical practice in the development of contract practice by large industries.

The company doctor is seldom instructed to confine himself to compensation cases. He branches out in competition with the doctors of the community and there is grave danger that the private practitioner will be squeezed out entirely in small communities, especially where large parts of the population are employed in the industrial plants.

Labor troubles, taxes, are prompting the big companies to look around for a place to spend their accumulations for the benefit of employees. Business men like to dabble in medical care. It seems to me that industrial practice holds more dangers for the private practice of medicine than care of the indigent.

Why shouldn't the workingman have his choice of physician?

No Need for State Medicine

J. L. McLEOD, M.D., Grand Rapids

If we have State Medicine in America, it will be for one of two reasons: either because State Medicine becomes necessary as it appears to be in Western Canada where no other medical care is available; or because as in Russia, our people—and particularly our legislators—are so ignorant that cranks and propagandists can easily prevail.

State medicine will not become necessary so long as we, as doctors, work closely and unselfishly with relief authorities. There is no such situation in the United States as in the remote sections of Canada and no such situation need ever come to pass.

The danger that ignorant legislators may fall victim to false propaganda is a real one. The remedy lies first in electing intelligent men to represent us on Capitol hill and then in keeping them properly informed.

The State Capitol is more and more the mecca for spokesmen of self interest. Few laws will be passed this session that have not been promoted loudly by these same spokesmen. But reforming our legislative system is a matter, first, of electing a good legislature.

As a result of the work of the Interim Committee some twenty bills have been placed before the Legislature, most important of which are the State Welfare Bill and the County Public Welfare Bill. The first calls for a central headquarters for administration of all welfare work; the second calls for a welfare board in each county for the same purpose.

In order to establish satisfactory county welfare boards it will be necessary to abolish the township system for care of the poor and a bill for this purpose is already introduced as part of the program of the Interim Committee.

Your representatives up here at Saint Paul are not going to abolish the township system, however, unless you make it emphatically known to them that you want it abolished.

The House of Delegates of the Minnesota State Medical Association went on record against the township system at its meeting in Rochester last May. *It is high time* that you told your legislators about the Roch-

ter resolution on this system. We still have no less than twenty-two out of the eighty-seven counties on the township system. And there is little we can do to coordinate and re-organize welfare work until there is public demand for this basic reform.

Most disinterested persons want to see a county welfare board with a representation of lay people of the community, people who are not county commissioners or politicians. It has been recommended that the boards be made up of five members, one or two of them county commissioners, two of them picked from the community by the commissioners. County commissioners have stormed when such plans have been suggested. They have asserted that they are elected by the people to administer county funds and so they intend to administer them.

The answer to that objection is, of course, that welfare funds are only in a part—and sometimes a small part—county funds. Funds are also provided by the state and the federal government and the commissioners should permit them to be administered in conformity with the state plans.

We respectfully request you to make this matter clear to your local county people.

There is no disposition on the part of anybody at the Capitol to interfere with the State Board of Health. We are endorsing the request of the Board, however, for additional space at the University.

Current Health Education Campaigns

E. A. MEYERDING, M.D., Saint Paul

Several nation-wide campaigns for persuading people to secure early treatment for disease have been started in the last year. All of them present a challenge to the practicing physician.

The campaign of the Women's Field Army of the American Association for the Control of Cancer has the approval of Organized Medicine and commands our support.

The campaign of the Surgeon General of the United States Public Health Service for syphilis control has encountered difficulties at the outset in the fact, developed by a survey under his predecessor, that serological laboratories are inadequate and far from standardized and that a vigorous campaign to gather people in for examination and treatment must be accompanied by careful preparation in the way of education of physicians and improvement of laboratory facilities for serological tests. Plans are being laid in the Surgeon General's office for such preliminary steps.

Other efforts are organizing or have been organized already including as objectives the improvement of maternal and child welfare, control of diabetes, deafness prevention, sight preservation.

All of them are worthy in aim and will find many enthusiastic proponents. Physicians MUST be ready for them. They must be ready to assist wherever their help can be given with propriety. They must be equipped with the latest knowledge of technics and treatment so as to take adequate care of everybody who comes to them as a result of these campaigns.

Failure to rise to this challenge may well mean a new threat of bureaucratic interference in the private practice of medicine.

For the Public Good

C. I. OLIVER, M.D., Graceville

You county officers will be interested to know that the medical profession is recognized in the Legislature. Legislators believe us when we come to them. They believe that we are telling the truth and that we are advocating only measures that are for the public good. That, of course, is a tremendous thing.

One tendency of these times should be noted and remedied. That is the tendency toward innumerable boards and investigators, all of whom want access to the confidential information possessed by the doctor.

There is a danger in all these requests to the intimate, confidential relationship between doctor and patient. The doctor cannot be too vigilant to protect this relationship.

Duties of a President

C. L. SCOFIELD, M.D., Benson

It should be the pride and duty of the president to guide his society, not only to higher scientific attainment, but to greater harmony. It is the president's job to steer his society clear of petty jealousies.

He should be reasonably familiar with Roberts' Rules of Order, too, and he should have each program thoroughly in hand before the meeting so that he can introduce his speakers properly and promote discussion.

Duties of a Secretary

C. L. OPPEGAARD, M.D., Crookston

As the secretary goes, so goes the society. The county secretary is the sergeant in the medical army. And the medical army, like the fighting forces, needs many good sergeants.

The secretary must be on speaking terms with all of the official agencies and he must be conversant with all the affairs of the community.

The secretary is responsible for society programs, of course, and it is our experience that local talent should be used for these programs to the extent of about 42 per cent. About 58 per cent of the talent should be from the outside and the visitors should be paid for their services. If you want good programs, it is our experience, you must be willing to pay for them.

Representatives of outside agencies, welfare workers and others should be invited to meetings occasionally and they should be asked to speak. There is no better way to show our good feeling and our willingness to work together.

Furthermore, all meetings, no matter who is the speaker, should be planned in detail. We fail, often, because we have not looked after apparently insignificant details.

Coöperation with the state secretary's office is an essential part of the county or district secretary's work. He must answer communications promptly, disseminate information promptly and, above all, he must himself be convinced of the importance of medical organization.

Membership

C. J. PLONSKE, M.D., Faribault

Keeping up the membership is a never-ending task but the energetic secretary can do it. He must keep in touch with recent medical graduates in his district and he must be ever watchful and alert to keep a hold on his lukewarm members. If the latter fail to pay their dues promptly a letter explaining to them in detail the work of the association and the benefits they derive from dues paid to it is helpful. Another prepared letter outlining the organization and its aims is useful for malcontents. These malcontents should be inside membership, if possible, instead of outside. Then you are in a position to educate them.

Programs

L. F. HAWKINSON, M.D., Brainerd

Too many of the talks given before county and district societies are excessively technical. They exhibit the speakers' knowledge, perhaps, but give little practical information.

What the Committee on Hospitals and Medical Education wants is a list of speakers who are willing to give practical talks and who will indicate in advance the subjects on which they are prepared to speak. The secretary can study the list, then, and pick out speakers and subjects for his program according to the interests of his own members.

Programs should be arranged on all of the current public health programs including the syphilis, the cancer, the maternal and child welfare and the diabetes campaigns in order to keep the members posted.

Local talent should be used particularly during periods when the weather is bad and visiting speakers find it difficult to be present. Much hidden ability will be found among these local speakers.

Medical movies are available. Dry clinics, case reports, specimens add interest. Discussions can be started by writing questions, giving them to the speaker from a question box in order to avoid possible embarrassment.

Post-graduate education is being extended rapidly these days by means of the Refresher courses for which the federal government is providing funds: the courses provided by the University at the Center for Continuation of Study, the Extension Division of the University. In all these the Committee on Hospitals and Medical Education has acted in an advisory capacity or as sponsor. They do not, of course, take the place of the individual county or district society program. It is wise to retain the same program chairman from year to year and among his duties in connection with this important job, not the least is newspaper

publicity. Patients should know that their doctors are meeting. They should be aware, also, that all enterprising and worthy practitioners are and should be attending these meetings.

County Medical Clubs

W. W. WILL, M.D., Bertha

We need local county organizations of some kind in every county in order to coöperate with the state association, with local county agencies.

Our Todd County Medical Club is part of the Upper Mississippi Medical Society. We have fourteen members, hold our own scientific meetings, have made study of our own costs for presentation to county commissioners. Such county clubs are particularly welcome in districts where the affiliate society of the state association includes several different counties and serves long distances. They do not in any way interfere with the state organization. On the contrary they work closely with it.

Public Health Association

J. A. MYERS, M.D., University of Minnesota

Minnesota's tuberculosis program is the best in the United States. Elsewhere they ask us repeatedly: how do you do it? I can tell them how we do it. We do it because of our close coöperation with the Minnesota Public Health Association. We do it because in Minnesota the Public Health Association and the Medical Association are not working at cross purposes. For more than ten years they have been united in a program to promote the early diagnosis and proper treatment of tuberculosis.

Benefits to Both

O. J. HAGEN, M.D. Moorhead

There is much benefit for both organizations in the enlarged services our relation makes possible. At 1 West Summit Avenue, Saint Paul, we share in equipment, in expert personnel, in professional services that would be impossible to finance independently.

We share in far-reaching educational programs that would be beyond our means otherwise even to contemplate. I am thinking of our college lecture course now so well established under the joint auspices of both organizations.

In the fight against tuberculosis Minnesota has made an enviable record. The modern program of tuberculin testing and x-raying of children has been carried to an extent equalled by few states. The educational campaign has been carried to remote districts. Our tuberculosis death rate is below the average for the nation. The possibility that tuberculosis may be reduced in Minnesota to a minor cause of death comes closer to reality each year.

To bring this ideal to pass calls for united action on the part of all of us.

Doctor in Charge

W. W. WILL, M.D., Bertha

The big thing from the point of view of our association is that a doctor should be in charge, not of the medical association only, but of the public health association as well.

The vigorous life of our medical organization in Minnesota in the last fifteen years is due to just one man—Dr. Meyerding.

To Fight Quacks

A. W. ADSON, M.D., Rochester

It is our responsibility and obligation to counteract the propaganda of quacks on the radio and in the newspapers. We cannot do it better than by close coöperation with the public health association which is organized specifically for this important work.

Malpractice

B. J. BRANTON, M.D., Willmar

Malpractice suits are increasing. One out of every four physicians is threatened each year in Minnesota. Nine out of ten of these cases are brought by people in the low income group. The only way to reduce this litigation is for the physicians themselves to work together—to avoid comments upon each others' work that might be seized upon as a pretext for suit; to avoid being drawn into any litigation as witnesses against their colleagues unless the situation clearly warrants such action; to keep adequate records. The fact is that 99 out of 100 malpractice cases are not warranted.

There are 3,089 licensed physicians in Minnesota of whom 73 per cent are members of the Association. In Minnesota there is now one physician for every 830 persons as compared with one to every 732 persons in Iowa. There are 713 specialists practicing in Minnesota, 630 partial specialists, so-called, and 1,680 general practitioners. It is, incidentally, of interest to note that the percentage of members of the bar association among lawyers admitted to the bar is 68 per cent.

An important decision was recently handed down by the Supreme Court; every physician should be aware of it. According to this decision, physicians are not required to insure a cure under any circumstances. They are required only to possess the skill and learning of the average practitioner in their own communities and to apply that skill and learning conscientiously.

Your attention should be called to the new membership card to which is attached, by a perforation, your malpractice card. This attached card entitles you to the consultant services of the Medical Legal Advisory Committee. It is appropriate that it should accompany your membership card and be ready at hand for use in any emergency. We hope it will act as a constant reminder, also, of the malpractice menace and the need for constant care to avoid it.

Medical Care of the Needy

B. E. YOUNGDAHL, Director, Division of Co-Ordinated Field Service, State Board of Control, Saint Paul

There is no uniformity in the type of plan used by Minnesota's eighty-seven counties to give medical service to those receiving some form of public assistance. A number of counties have retained the old FERA plan, a few are operating under special agreements with all of the practicing physicians in the county, and some have gone back to the plan of employing a single county doctor. The last two plans have not worked out so well from the standpoint of giving effective service to the client.

Of the several plans now in operation for giving medical service to the people in need, the one based on the general principles of the FERA medical plan is most satisfactory. It not only gives the most effective medical service, but it also maintains certain important relationships. Under this plan the client has his choice of physician and the family-physician relationship is preserved. A mutually agreeable fee schedule is set up by the agency administering public aid and the medical group. The agency determines the financial need of the applicant and refers to the doctor of the client's choice for medical diagnosis and necessary treatment.

Old Age Assistance

KENNETH HAYCRAFT, Director, Division of Old Age Assistance, State Board of Control, Saint Paul

It is the desire of the Division of Old Age Assistance of the State Board of Control that all persons in Minnesota who are eligible for aid under the Old Age Assistance Act receive such medical services as are necessary for their physical well-being. Ample authority is contained in the Old Age Assistance Act whereby the various counties in making grants of Old Age Assistance to Minnesota's aged needy can include the cost of necessary medical services.

Under an opinion of the Attorney General dated August 1, 1936, which interprets Section 5-c of the Old Age Assistance Act, the various counties are authorized to include in a grant of Old Age Assistance provision for medical care where a proper showing of need is made for the same. It is the policy of the Division of Old Age Assistance of the State Board of Control that medical care thus allowed should be primarily such care as will be needed over a considerable period of time. Requirements for special or occasional medical services by recipients of Old Age Assistance ordinarily should be taken care of outside of Old Age Assistance, usually through public relief or other county or local funds.

It is important from the standpoint of the effective administration of the Old Age Assistance Act not only that grants for medical services be made in terms of the needs of the recipients themselves but also that such grants be made with a view to insuring that physicians who render medical services to recipients receive

adequate and proper remuneration for their work. Only on such a basis can a long-range program of medical care for Old Age Assistance recipients be successfully carried out; and from an administrative standpoint it is possible to execute this policy only if the chief medical services provided for by grants of Old Age Assistance are those services that will be needed by recipients over a long-range period.

Social Security

E. C. HARTLEY, M.D., Director, Division of Child Hygiene, Minnesota Department of Health, Minneapolis

The Social Security Act is wide in its scope and touches many aspects of our national life. It must be borne in mind, however, that such of its provisions as pertain to health have been assigned in each State to the Health Department of such states for their administration.

Broadly speaking, what the State Board of Health is trying to do with the federal aid so obtained is to make the State more keenly aware of the promises of modern medicine in safeguarding individual and public health. In this purpose it is receiving the vital co-operation of the medical, dental and nursing professions. New Public Health Nursing Services are being established, and many services, both old and new, are being aided financially by the State Department of Health through its federal grants. A new section of Dental Health Education has been added, of which Dr. Vern D. Irwin, editor of *North-West Dentistry*, is superintendent. Education work in Maternal and Child Health is being greatly expanded.

A new educational venture, recently started by the Health Department in coöperation with the State Medical Association and the University Medical School, is the "Refresher Course in Obstetrics and Pediatrics" for Minnesota physicians. The first of the series is drawing to a close, and has been well received and well attended. With the coming of summer, these classes will be repeated throughout the state.

For Crippled Children

H. E. HILLEBOE, M.D., Director, Division of Services for Crippled Children, State Board of Control, Saint Paul

On February 15, 1937, there were approximately 7,500 crippled children under twenty-one years of age registered in the Division of Services for Crippled Children of the Minnesota State Board of Control. Nearly 200 patients have been hospitalized in private hospitals and were given medical care and treatment with funds allotted to Minnesota under the Social Security Act for Services for Crippled Children. This expenditure includes the payment of fees to physicians, hospital costs and the cost of all necessary braces and appliances.

In the past six months of service, the six public health nurses employed by the Division to do public

health nursing among crippled children in rural areas have visited sixty-seven counties and have reported 61 new cases to the central registration bureau. Five hundred local physicians were visited, and a total of 2,652 nursing visits were made to and in behalf of patients through January.

Eight crippled children clinics have been held in rural areas up to the present time, and 719 crippled children under twenty-one years of age were examined. These clinics were held in coöperation with the Minnesota Public Health Association.

The original allotment to Minnesota for the fiscal year ending June 30, 1937, was \$49,000, and because of the need shown for additional funds, the Federal Government allotted Minnesota an additional \$41,000 to extend and improve services, particularly in rural areas.

Coöperative activities are being carried on with all private agencies interested in the crippled child. Plans are being made to develop a convalescent home where special care and special teaching would be available for cerebro-spastics and rheumatic heart cases, particularly. The outlook for the crippled child is definitely brighter, thanks to the allotment of Federal funds through the Social Security Act.

Results

J. F. DuBois, M.D., Secretary, Minnesota State Board of Medical Examiners, Sauk Center

The following figures, based on Dr. DuBois' talk show the working of the Basic Science Law since its passage in 1927:

On April 12, 1927, there were 465 osteopaths registered. Since then forty have passed the examination one has come in by reciprocity and eight by previous licensure. Yet, in 1936 there were only 166 registered.

On April 12, 1927, there were 592 chiropractors registered. Since then thirteen have passed the Basic Science examinations and three have registered by previous licensure. Yet, in 1936 there were 410 registered.

In 1928 there were 111 midwives registered. Six new licenses have been issued to date. Yet, in 1936, only sixty-four were registered. There are no approved schools of midwifery in the United States. An applicant must pass a written and oral examination and must be vouched for by two reputable physicians.

Syphilis Control

A. J. CHESLEY, M.D., Executive Officer, Minnesota Department of Health, Saint Paul

The syphilis program of the United States Public Health Service may lead to complications. It requires thought and study and planning for satisfactory results. Syphilis control is not a new thing. Public health officers have been working on it for a long time. Federal money will make it possible to extend the work, to establish more laboratories and furnish more drugs. Illinois is going to spend the money appropriated for syphilis control on drugs. In the long run, an adequate supply of drugs for use of all physicians who are treat-

g syphilis will do more to control and prevent this disease than any number of free clinics.

Outlook for Medicine

A. W. ADSON, Rochester

One thing is obvious. People are going to continue to be sick and we are going to take care of them. It is also obvious that those of us who are best qualified for the work will be the most successful.

New plans for care of the aged, the crippled, the indigent and the near indigent are being tried or planned for the future. Let us hope that those in charge will come to us for help. Let us hope that the patient, no matter whether he is indigent, aged or crippled, will be allowed to choose his own physician and that payment for the physician's work will be established on a fee basis.

Many problems remain to be solved. Some of them involve contract practice, some health insurance. In any case the answers are not easy and it is evident that we must work through our State Association and our committees if any satisfactory solution is to be attained. We are all interested in the larger problem which involves all of our lesser perplexities—the provision of adequate care for everyone who needs it and of adequate compensation to the physician who gives

We have our individual problem to solve also, the problem of keeping up to date. Post-graduate courses are being provided in far greater numbers than ever before. Every doctor will hasten to take advantage of them.

County societies must shoulder their individual responsibility for leadership in public health education in the community, for proper participation in the extension of immunization, in education about cancer, in improvement of maternal and child welfare of the community.

Our best defense against radical and subversive changes in our system of medical practice is certainly the sympathetic, energetic, and intelligent participation of physicians as a body in the welfare of the community.

Distinguished Economic Speakers

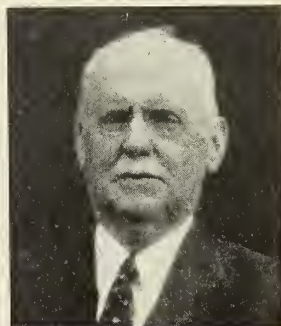
Among the large number of interesting personages who will come to Saint Paul for the 34th Annual Meeting of the Minnesota State Medical Association, readers of these columns will be especially interested in Dr. Nathan B. Van Etten of New York City and Dr. Edward H. Skinner of Kansas City, Mo., both of whom will talk to Minnesota physicians on problems involved in the social and economic relations of medicine.

Dr. Van Etten is speaker of the House of

Delegates of the American Medical Association and he was one of the signers of the minority report of the Committee on Costs of Medical Care. He will address a Medical Economics symposium



DR. E. H. SKINNER



DR. N. B. VAN ETTEN

Tuesday, May 4, on the subject "Medical Care for All Americans." Dr. Maxwell J. Lick, Erie, Pa., president of the Medical Society of the State of Pennsylvania, and Dr. Morris Fishbein, Chicago, editor of the *Journal of the American Medical Association*, will appear with Dr. Van Etten on this symposium. The subjects of the latter two are: "The Doctor Looks at Social Security" and "Our Professional Future" respectively.

Dr. Van Etten will also give a public address on "The Medical Citizen" at the Public Health Meeting, Tuesday night.

Dr. Skinner will deliver the Russell D. Carman Memorial Lecture on the subject "Reflections on the Roentgenology of Fractures," Monday, May 3, but he will arrive in time, also, to address the House of Delegates, Sunday.

Varied Interests

Dr. Skinner's interests are varied. He is president-elect of the American Radium Society, chairman of the Public Health and Welfare Committee of the Kansas City Chamber of Commerce and a director of the Council of Social Agencies. He has been editor of the *Kansas City Medical Journal* for the past five years and he was organizer, fifteen years ago, of the Kansas City Southwest Clinical Society which publishes the *Journal*. He also founded the Kansas City Library Club and has been continuous chairman of the Library Committee of the Jackson County Medical Society which, some fifteen years ago, took over the library started by this club. The library now numbers 25,000 volumes.

For the Congress

Readers of these columns will be interested to know that C. Rufus Rorem, Ph.D., formerly associated with the Julius Rosenwald Fund and an economist with the Committee on Costs of Medical Care, will come to Saint Paul to participate in the discussions of the Congress of Allied Professions, Monday, May 3. Dr. Rorem is now engaged as executive director in a study of voluntary hospital insurance under the sponsorship of the American Hospital Association for which the Rosenwald Fund recently made a grant of funds (*See March issue, these columns*).

Among other representative speakers from the allied professional groups who will speak to this conference are Dr. Martha Eliot, Washington, D.C., assistant chief of the Children's Bureau of the Department of Labor; Rev. Alphonse M. Schwitalla, S.J., dean of the St. Louis University Medical School and president of the Catholic Hospital Association; Miss Daisy Dean Urch, director of the school of nursing, College of St. Teresa, Winona, and president of the State League of Nursing Education; Dean Charles H. Rogers, College of Pharmacy, University of Minnesota, and Dr. Fishbein. Dr. George A. Earl of Saint Paul, chairman of the Council, is chairman of the committee in charge of the program.

Syllabus

The syllabus of discussions which will be followed in a general way by all the speakers at the afternoon and evening sessions is printed below.

SYLLABUS OF DISCUSSIONS

A Frank and Impersonal Discussion of Present-day Opinion on all the Factors Involved in the Distribution of Medical Care with a View to finding the Best Means of Protecting the Health of the American People.

I. THE PICTURE TODAY

A. Health of the American People.

1. Classification of the population according to ability to maintain health and secure essential professional care and needs of each:

Wealthy	Marginal
Average	Indigent

2. Distribution of professional services to all classes.

Dentistry
Hospitals and Allied Organizations
Medicine
Nursing
Pharmacy

Social Welfare Service

Executives

Anesthetists

Dietitians

Hospital and Medical Librarians

Nurses' Training Schools

Technicians

B. Programs of National and State Agencies.

1. Social Security Act.
2. Direct relief.
3. WPA.

C. Programs of Voluntary Agencies.

1. Experiments in care for indigents and low income groups by organized medicine.
2. Experiments and plans of organized dentistry.
3. Experiments in group hospitalization by hospital executives.
4. Outlook for all of these private efforts.

II. OUTLOOK FOR THE FUTURE

A. Changing Philosophies of Government.

1. Socialization of healing in foreign countries.
2. Tendencies in America.
3. Future government program.

B. The Destiny of the Professions in the United States.

1. Safeguarding of professional standards.
2. Protection of the rights of the individual freedom of choice in professional service.

Your Notification Card

(Monthly Editorial prepared by the Medico-Legal Advisory Committee.)

IF SUED OR THREATENED WITH SUIT, DETACH
AND MAIL WITHIN FIVE DAYS

TO

THE MEDICO-LEGAL ADVISORY COMMITTEE
MINNESOTA STATE MEDICAL ASSOCIATION

11 WEST SUMMIT AVENUE
SAINT PAUL, MINN.

AND NOTIFY YOUR INSURANCE COMPANY AT ONCE

"KEEP COMPLETE WRITTEN RECORDS"

1937 SIGN HERE

PRINT NAME

Above is a copy of the notification card attached to the membership card which each member in good standing should have received when he paid his dues for 1937.

Do not detach it from the membership card until it is needed in order to notify the state of fee of suit threatened or pending. Your Medical-Legal Advisory Committee has devised this means of bringing certain thoughts more forcefully before the association membership.

1. It should and will serve as a daily reminder that members owe a duty not only to their clientele but to the other men in the society and community.

2. When used, it will make available the efforts of the Committee in the member's behalf. To be effective, remember to send the card in before five days have elapsed, if possible; then answer the questionnaire sent you and return at once by mail.

3. It will make each one value the services of a good and competent insurance company. These companies are anxious to carry out the provisions of their policies. Give them a fair chance through early reports.

4. It draws attention to the fact that your committee has found that nothing is so detrimental to a good result in a case as poor records. Keep your records carefully. Write them intelligibly and file them properly so that they are available at once.

5. It is a reminder again that you belong to an organization of men devoted to helping humanity, to the uplifting of the plane of human existence,—men in whom selfishness and deceit should be forgotten in the willingness to strive for each other's rights.

Is it not an honor and privilege to be able to carry a card with so many potential applications?

Interest In The Survey

Many physicians answered the call for volunteers to assist in a survey of medical costs in Minnesota.

It is obvious that there is a genuine interest on the part of members and the committee in the large, including Dr. W. W. Will, chairman, Dr. A. W. Adson, Dr. G. A. Earl, Dr. T. H. Sweetser, Dr. E. A. Meyerding, and Dr. H. S. Diehl, is now at work on details of the study.

In the meantime, another letter will go out to all members, it was decided at a February

meeting, which will ask for general information on type of practice, gross cash income, professional expense, net income and the percentage of practice unpaid for or done without expectation of remuneration. Replies to this letter may be returned to the committee unsigned and every doctor, particularly older members whose estimates will be based upon experience over many years, are urged to reply to the letter.

Minnesota State Board of Medical Examiners

Medical Board Issues Warning to Physicians Unlawfully Writing Liquor Prescriptions

On November 27, 1936, Mr. William Mahoney, Liquor Control Commissioner of the State of Minnesota, directed the attention of the State Board of Medical Examiners to the flagrant violation of the Liquor Control Act in this state by a number of physicians, particularly in the twenty-eight dry counties in Minnesota.

Following an investigation made by the Board in cooperation with Mr. Mahoney, it was ascertained that a number of physicians wrote out hundreds of prescriptions for liquor and that these prescriptions were not written in good faith. Some of the prescriptions were written in blank and merely signed by the physician. Others were written out calling for whiskey with no names on the prescriptions to show for whom they were intended, and in all of the cases the prescriptions were left at various drug stores to be used at the convenience of the druggist. As a result of the investigation, four physicians, two druggists and one veterinarian appeared at the meeting of the Medical Board, held on February 6, 1937. The Veterinarian Board was represented at the hearing by Dr. Robert Coffeen of Stillwater, Minnesota, secretary, and Mr. Knute D. Stalland, attorney. The Pharmacy Board was represented by Mr. Prochaska, secretary. Mr. Mahoney appeared on behalf of his department. He was also accompanied by Mr. Blake, one of the inspectors of the Liquor Control Commission. Everyone concerned admitted his guilt at the hearing and the four physicians were voted a reprimand by the Board. The evidence showed that, in some cases, the physician received no remuneration for the prescriptions, while, in one case, the evidence showed that the physician received five cents per prescription.

The Medical Board is of the opinion that it should hardly be necessary to reprimand a physician for this type of misconduct. The Board believes that it should be self-apparent to the medical profession of this State that their license to practice medicine entitles them to prescribe whiskey, in good faith, to bona fide patients for medicinal purposes only. The Board cannot urge too strongly upon the medical profession of this State

that this type of violation of the law only casts reflection upon the entire medical profession. The Board feels that Mr. Mahoney was more than justified in calling the matter to the attention of the Board. Further violation of the Liquor Control Act by physicians will result in prosecutions and disciplinary action by the Board. The Board hopes by this article to call this matter to the attention of a large proportion of the physicians of this State. It is appreciated, of course, that by far the larger number of physicians respect and comply with the Liquor Control Act. It is the violation of the law by a small group that causes other individuals to suggest legislation imposing additional restrictions upon the medical profession.

In conclusion, the Board wishes to state that it appreciates the attitude displayed by Mr. Mahoney in first coming to the Medical Board rather than taking the cases to court. Mr. Mahoney has been assured that he will be shown a friendly and cooperative attitude. The Board asks that each and every physician in the state do his part to respect this law.

and pills for the treatment of diseases. Some patients he charged \$2.00 per treatment and others he gave flat price of \$10.00. McHale was represented at the trial by Louis J. Pluto, former county attorney of Todd County. The defendant, throughout the trial, acted very confident as to the outcome but lost some of his enthusiasm when the jury returned a verdict of guilty. The defendant did not take the witness stand in his own behalf and his attorney spent a considerable portion of his argument to the jury in denouncing the medical profession, claiming that they were hostile towards chiropractors and natural healers. The arguer apparently failed to impress the jury because the deliberated only a little over an hour before returning a verdict. Shortly prior to the trial the defendant stated to Judge Thompson that he was without means and the Court appointed Mr. Pluto to represent him at the expense of Todd County, as the law requires. The State was represented by Mr. J. Norman Peterson, county attorney of Todd County, and Mr. Brist, who was appointed assistant county attorney of Todd County for the purposes of the trial.

The State Board of Medical Examiners wishes to acknowledge the splendid piece of work done in this case by Mr. Peterson as county attorney. The Board also appreciates the prompt reference of this case for trial by Judge Cameron.

"Nature Healer" Convicted by a Jury at Milaca

Re: State of Minnesota vs. R. A. McHale

Following a trial by a jury, R. A. McHale, thirty-eight years of age, Long Prairie, Minnesota, was convicted, on March 23, 1937, at Milaca, Minnesota. McHale was arrested on November 13, 1936, at Long Prairie and charged with practicing healing without a basic science certificate. Following a preliminary hearing, the defendant was held to the next term of the District Court, and when arraigned on March 16, 1937, filed an affidavit of prejudice against the Honorable D. M. Cameron, presiding judge. Judge Cameron immediately referred the case for trial to Milaca, Minnesota, where the District Court was in session with the Honorable Anton Thompson, Fergus Falls, Minnesota, presiding. Just what prompted the defendant to file an affidavit of prejudice against Judge Cameron has not been made clear. Judge Cameron has a reputation of knowing the law and being a fair trial judge. At the conclusion of the trial, Judge Thompson sentenced the defendant to a term of four months at hard labor in the Todd County Jail at Long Prairie.

The evidence on the part of the State at the trial showed that McHale came to Long Prairie in May, 1936, from Brainerd, Minnesota. The evidence also showed that McHale represented himself as "Dr." McHale and that he told numerous persons that he was a chiropractor. In August, 1936, McHale opened an office for the practice of healing and put up a sign which read as follows:

PHYSICAL CULTURE INSTITUTE—
PASSIVE GYMNASTICS—
PSYCHOTHERAPY—
R. A. McHALE.

The evidence further showed that McHale examined patients, prescribed diets, administered manual manipulation and light treatments and furnished salve

Fosston Naturopath Denied Basic Science Certificate by Court

Re: State of Minnesota ex rel. Knute W. Luross, vs. Basic Science Board

On February 5, 1937, the Honorable M. A. Brattland, Judge of the District Court of Polk County, Minnesota, made an order sustaining the demurrer interposed by the Basic Science Board in the action whereby Luross attempted to secure a basic science certificate without examination. Judge Brattland, in his order stated:

"The facts in this case are substantially the same as those in the case of Shenk v. State Board of Examiners, 189 Minn. 1, 250 N. W. 353, and I cannot differentiate between them. I therefore prefer to give the Supreme Court another opportunity to consider the question."

Judge Brattland gave Luross a stay of thirty days to perfect an appeal to the Supreme Court of Minnesota, but no such appeal has been taken.

Luross was tried by a jury in the District Court of Polk County, in March, 1936, on information charging him with practicing healing without a basic science certificate and was found guilty. He was sentenced to a term of six months in the Polk County jail by Judge Montague and the sentence was suspended on condition that he refrain from practicing healing unless properly licensed.

Mr. John I. Davis of Benson, Minnesota, and Mr. W. E. Rowe of Crookston, Minnesota, appeared as attorneys for Luross. The Basic Science Board was represented by the Honorable Harry H. Peterson, the Attorney General, the Honorable William S. Ervin, present Attorney General, and Roy C. Frank, Assistant Attorney General. The work done by the Attorney General's office in this case should bring to a close litigation designed to secure basic science certificates for members of the naturopathic group without examination.

President's Letter

OUR STATE MEETING

OUR State Meeting will be held in Saint Paul on May 3, 4 and 5. The Program Committee has prepared an unusually good program in that the subjects to be discussed cover a variety of topics which will be of interest to general practitioners as well as to those limiting themselves to surgery, medicine, or a specialty. The first two days will deal with problems of routine practice, while the third day will be devoted exclusively to industrial medicine. Medical and surgical sections will be held separately for limited periods each day, following which joint sections will be held to hear symposiums or visiting speakers of prominence. Diagnostic clinics, demonstrations, scientific exhibits and question courts are included in the program with the hope that every member of the State Association will find something of personal interest and scientific value. Our Secretary and Staff and Local Committees are working tirelessly in order to assure us of a successful meeting.

The two innovations of this meeting are, first, a joint congress with the allied professions in which medical economics will be ably presented by national speakers, and secondly, a program on industrial medicine.

The State Meeting should be interesting and instructive. Plan to attend, and bring your wife along for she too will be welcome.

A. W. ADSON, M.D., President,
Minnesota State Medical Association.

MINNESOTA STATE MEDICAL ASSOCIATION

EIGHTY-FOURTH ANNUAL SESSION

MAY 2, 3, 4, 5, 1937

SAINT PAUL, MINNESOTA

Meeting Headquarters: Saint Paul Auditorium

ANNOUNCEMENTS

Register and Secure Your Badge at the Registration Desk as soon as you arrive. Registration on Sunday will be at the Lowry Hotel. Registration for the remainder of the meeting will be at the Auditorium.

The Congress of Allied Professions will meet on Monday, May 3, at the Lowry Hotel. There will be joint sessions of the Allied Professions and the Minnesota State Medical Association at the Auditorium Theatre at 8 p. m. Registration badge of the Minnesota State Medical Association will entitle members to attend all sessions of the Congress of Allied Professions.

Minnesota Medical Alumni Reunion: The Medical Alumni of the University of Minnesota will meet for dinner in the Ballroom of the Lowry Hotel, Monday, May 3, at 5:30 P. M. The meeting will adjourn in time for members to attend the meeting of the Congress of Allied Professions at the Auditorium Theatre, 5th St. entrance. Purchase your tickets for the Alumni Dinner at the registration desk.

Minnesota Society of Obstetrics and Gynecology is sponsoring a Question Conference at 9:00, Monday morning, May 3. Anyone wishing to send in questions must have them in the Secretary's Office, 11 West Summit Avenue, St. Paul, before April 30.

General Assembly: The General Assembly is to be held on Wednesday, May 5, at 10:45 A. M. At this time there will be the Annual Report of the Secretary, the Installation of the Officers, and the Presentation of the Southern Minnesota Medical Association Medal for the best Scientific Exhibit.

Railroad Rates: Reduced First Class round trip fares at one-third reduction or 2 cents per mile, good thirty days from date of sale. Round trip tickets good in coach at 1.8 cents per mile which is a 10 per cent reduction. Tickets good for thirty days from date of sale. See your local railroad agent for exact railroad fares to St. Paul and return.

Golf Tournament: A Golf Tournament will be held at Midland Hills Country Club, on Monday, May 3, at 2:00 P. M. Numerous prizes have been offered. In addition, a blind bogey will be arranged. Make your reservations with Dr. Gust Edlund, 170 North Snelling Avenue, Saint Paul. A buffet supper will follow.

LOCAL ARRANGEMENTS COMMITTEES

General Chairman—W. R. McCarthy
Auditorium—B. E. O'Reilly, H. F. Flanagan
Golf—Gust Edlund, J. M. Culligan, W. F. Hartfiel
Hotel Reservations—J. R. Meade, E. C. Gibbs, S. W. Shimonek
Publicity—J. A. Moga
Reception—G. E. Strate, H. F. Flanagan, M. O. Thoreson, and Sub-Committees.
Reunion—W. R. Shannon, E. C. Hartley, J. E. Holt
Scientific and Technical Exhibits—C. H. Mattson, W. G. Johanson, D. B. Peterson

Business Program

Sunday, May 2

Lowry Hotel

9:00 A. M.—Council Tahitian Room
 3:00 P. M.—House of Delegates Ball Room
 4:30 P. M.—Reference Committees
 Scientific Committees:
 Medical Education Silver Room
 Miscellaneous Colonial Room
 Non-Scientific Committees:
 Officers and Council Reports Blue Room
 Constitution Green Room
 State Health Relations Spanish Room
 Lay Education Spanish Room
 Medical Economics Spanish Room
 5:00 P. M.—Council Tahitian Room
 7:30 P. M.—House of Delegates Ball Room
 How the Kansas City Profession is Meeting Social Security Problems
 E. H. SKINNER, President-elect, American Radium Society, Kansas City
 "Better Health" Activities
 OLIN WEST, Secretary, American Medical Association, Chicago

TUESDAY, MAY 4

11:30 A. M.—Council Tahitian Room

WEDNESDAY, MAY 5

General Assembly

10:45 A. M.—Presentation of Officers Auditorium Theatre

Scientific Program

Monday, May 3, 1937

MEDICAL SECTION—Morning Session

8:00 A. M.

Presiding—A. H. BEARD

Chest Lesions and Tuberculosis Clinic

E. K. GEER, Saint Paul
 D. G. GARDINER, Saint Paul

Pediatric Clinic

T. L. BIRNBERG, Saint Paul

Practical Application of Endocrine Therapy

E. H. RYNEARSON, Rochester

Hemolytic Anemia

C. J. WATSON, Minneapolis

Induced Fever

M. E. KNAPP, Minneapolis

SURGICAL SECTION—Morning Session

8:00 A. M.

Presiding—M. W. ALBERTS

Reconstructive Surgery Clinic

H. P. RITCHIE, Saint Paul
 N. L. LEVEN, Saint Paul

End Results in the Treatment of Malignancy—Clinical

ARNOLD SCHWYZER, Saint Paul

Question Conference

R. D. MUSSEY, Rochester
E. C. HARTLEY, Saint Paul
J. C. LITZENBERG, Minneapolis
J. R. MANLEY, Duluth
C. B. MCKAIG, Pine Island
L. M. RANDALL, Rochester
J. L. ROTHROCK, Saint Paul

SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

10:00 A. M.

GENERAL ASSEMBLY

11:00 A. M.

Presiding—A. W. ADSON

Fessell D. Carman Memorial Lecture—

Reflections Upon the Roentgenology of Fractures
Minnesota Radiological Society, Sponsor
E. H. SKINNER, Kansas City, President-elect, American Radium Society; Chancellor, American College of Radiology

Citizens' Aid Society Memorial Address—

Radiation Therapy of Tumors With a Consideration of the Possibility of Supervoltage X-rays
ROBERT STONE, San Francisco, Associate Professor of Roentgenology, University of California; Director, Roentgenological Department, University of California Hospital

MEDICAL SECTION—Afternoon Session

1:00 P. M.

The Use of Mandelic Acid in Treating Infections of the Urinary Tract

E. N. COOK, Rochester

Modern Medical Trends in Pediatrics

F. C. RODDA, Minneapolis

Congenital Hypertrophic Pyloric Stenosis

O. W. ROWE, Duluth

Vaccination of Children Against the Common Diseases of Childhood

W. B. RICHARDS, St. Cloud

Bilepsy

L. R. GOWAN, Duluth

Gonorrhea

C. H. SLOCUMB, Rochester

Medical Panel

W. A. O'BRIEN, Chairman, Minneapolis

SURGICAL SECTION—Afternoon Session

1:00 P. M.

Mistaken Diagnoses in Tumors of the Nose and Throat

L. R. BOIES, Minneapolis

Acute Otitis Media and Mastoiditis—Some Observations

C. L. OPPEGAARD, Crookston

Visual Impairment Due to Neglect

F. E. BURCH, Saint Paul

Rhinitis

K. R. FAWCETT, Duluth

Indications for Newer Anesthetics

J. S. LUNDY, Rochester

E. B. TUOHY, Rochester

Transurethral Resection

C. D. CREEVY, Minneapolis

Treatment of Empyema

T. J. KINSELLA, Minneapolis

Ladder Tumors

P. F. DONOHUE, Saint Paul

SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

3:00 P. M.

SYMPOSIUM ON PEPTIC ULCER

4:00 P. M.

Presiding—A. H. BEARD

Physiologic Mechanisms in Relation to the Development of Peptic Ulcer

F. C. MANN, Rochester

X-ray Diagnosis of Ulcer

R. W. MORSE, Minneapolis

Medical Management

G. B. EUSTERMAN, Rochester

The Surgical Treatment

D. C. BALFOUR, Rochester

Panel on Peptic Ulcer

W. A. O'BRIEN, Chairman, Minneapolis

CONGRESS OF ALLIED PROFESSIONS

8:00 P. M.

Tuesday, May 4, 1937

MEDICAL SECTION—Morning Session

8:00 A. M.

Presiding—A. H. BEARD

Clinic:

Use of the Gastroscope

A. C. KERKHOF, Minneapolis

New and Useful Drugs

R. N. BEITER, Associate Professor of Pharmacology, University of Minnesota

Pulmonary Embolism

J. S. MCCARTNEY, Minneapolis

Applied Physiology of the Heart in Relation to Heart Failure

M. B. VISSCHER, Professor of Physiology, University of Minnesota

Serum Treatment of Pneumococcus Pneumonia

C. N. HENSEL, Saint Paul

Post-Institutional Care of the Insane

W. P. GARDNER, Fergus Falls

Prenatal Treatment of Congenital Syphilis

R. A. VONDERLEHR, Washington, D. C., Assistant Surgeon General U. S. Public Health Service

SURGICAL SECTION—Morning Session

8:00 A. M.

Presiding—M. W. ALBERTS

Clinic:

The Diagnosis of Hyperthyroidism

R. A. JOHNSON, Minneapolis

The Surgical Treatment of Hyperthyroidism

MARTIN NORDLAND, Minneapolis

The X-ray Treatment of Hyperthyroidism

ADAM SMITH, Minneapolis

Parathyroid Disease

R. M. JOHNSON, Minneapolis

Acute Condition of the Abdomen

A. E. SOHMER, Mankato

Carcinoma of the Breast

S. W. HARRINGTON, Rochester

Surgical Diseases of the Pancreas

O. H. WANGENSTEEN, Minneapolis

PROGRAM—EIGHTY-FOURTH ANNUAL MEETING

Tuesday, May 4, 1937

SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

10:00 A. M.

GENERAL ASSEMBLY

11:00 A. M.

Presiding—H. W. GOEHRS

Important Injuries About the Eyes

JOHN M. WHEELER, New York, Professor of Ophthalmology, Columbia University

Hypertensive Heart Disease—Its Clinical Pathological Manifestations

FRANCIS D. MURPHY, Milwaukee, Professor of Medicine and Director of the Department of Medicine, Marquette University
Northern Minnesota Medical Association, Sponsor

GENERAL ASSEMBLY ON MEDICAL ECONOMICS

1:30 P. M.

Presiding—A. W. ADSON

The Doctor Looks at Social Security

MAXWELL J. LICK, Erie, Pa., President, Medical Society of the State of Pennsylvania

Medical Care for All Americans

NATHAN B. VAN ETIEN, New York, Speaker of the House of Delegates, A. M. A.

Our Professional Future

MORRIS FISHBEIN, Chicago, Editor, *Journal of the American Medical Association*

SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

3:00 P. M.

MEDICAL SECTION—Afternoon Session

4:00 P. M.

Presiding—A. H. BEARD

Protein Deficiency Edema

S. H. BOYER, JR., Duluth

The Clinical Test for Pregnancy

D. E. MOREHEAD, Owatonna

Sterility

J. A. URNER, Minneapolis

Cosmetic Dermatitis

F. W. LYNCH, Saint Paul

SURGICAL SECTION—Afternoon Session

4:00 P. M.

Presiding—M. W. ALBERTS

Acute Appendicitis

J. F. NORMAN, Crookston

Fissure in Ano

W. A. FANSLER, Minneapolis

Hernia, "The Kettle or the Pot?"

B. J. GALLAGHER, Waseca

Surgical Panel

W. A. O'BRIEN, Chairman, Minneapolis

INDUSTRIAL DINNER

6:30 P. M.

Lowry Hotel Ballroom

Presiding—A. W. ADSON, *President*

Address of Welcome—

GOVERNOR ELMER A. BENSON, Saint Paul

President's Address—

A. W. ADSON, Rochester

Prompt Reporting and Coöperation with Commissions

MR. VOYTA WRABETZ, Madison, Chairman of the Industrial Commission of Wisconsin

PUBLIC HEALTH MEETING
(Open to the General Public)

8:00 P. M.

Auditorium Theater

The Child and the Physician

REVEREND ALPHONSE M. SCHWITALLA, S.J., Saint Louis, Dean of the St. Louis University School of Medicine, and President of the Catholic Hospital Association

The Medical Citizen

N. B. VAN ETIEN, New York, Speaker of the House of Delegates of the American Medical Association

What the Public Can Do in the Present Campaign for Control of Syphilis

R. A. VONDERLEHR, Washington, D. C., Assistant Surgeon General, U. S. Public Health Service

Quacks of the Year

MORRIS FISHBEIN, Chicago, Editor, *Journal of the American Medical Association*

Wednesday, May 5, 1937

NORTHWEST INDUSTRIAL MEDICAL CONFERENCE

Presiding—A. W. ADSON and D. P. HEAD

Address of Welcome

MR. F. T. STARKEY, Saint Paul, Chairman, Minnesota Industrial Commission

Back Injuries

J. R. KUTH, Duluth

Adequate and Inadequate Treatment of Head Injuries

W. McK. CRAIG, Rochester

Fracture Dislocation of the Shoulder

H. W. MEYERDING, Rochester

Differential Diagnosis in Acute Abdominal Trajectories

MAXWELL J. LICK, Erie, Pa., President, Medical Society of the State of Pennsylvania

Hand and Wrist Injuries

WALLACE COLE, Saint Paul

SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

10:00 A. M.

GENERAL ASSEMBLY

10:45 A. M.

Presiding—A. W. ADSON, *President*

Report of the Secretary

Installation of Officers

Presentation of the Southern Minnesota Medal

Pitfalls in the Management of Hand Infections

MICHAEL L. MASON, Chicago, Associate Professor of Surgery, School of Medicine, Northwestern University

Injuries to the Thigh

B. S. ADAMS, Hibbing

(Continued on Page 260)

OF GENERAL INTEREST

Dr. L. E. Claydon of Red Wing, Minnesota, has returned from a several weeks' trip to foreign countries.

* * *

Dr. A. D. Haskell was elected mayor of Alexandria at the recent city election, polling a large majority of votes.

* * *

Dr. W. H. Nuessle of Springfield has been elected president of the local chapter of the American Red Cross.

* * *

Dr. William H. Rumpf of Faribault, who has been seriously ill with pneumonia, is reported greatly improved.

* * *

Dr. U. Schuyler Anderson has moved from Austin to Minneapolis, where he has opened offices at 350 Medical Arts Building.

* * *

Dr. John Lohmann of the state hospital staff, Fergus Falls, has resigned his position there and moved to Jasper, Minnesota, where he will engage in general practice.

* * *

The Minnesota Society of Internal Medicine will meet in Minneapolis, Monday, May 24, 1937. Dr. Cecil Watson, University Hospital, Minneapolis, is chairman of the Program Committee.

* * *

Dr. Leila Gorenflo, a graduate of Rush Medical College who recently completed her internship at the Los Angeles County Hospital and the State Sanatorium at Ah-Gwah-Ching, has opened offices for practice at Cass Lake.

* * *

The American Medical Golfers' Association will hold its twenty-third annual tournament at Seaview Country Club, Atlantic City, Monday, June 7, 1937, in connection with the annual American Medical Association meeting. Application blanks may be obtained from Wm. J. Burns, 2020 Olds Tower, Lansing, Michigan.

* * *

Dr. David M. Parker, who recently opened offices for practice in Mountain Iron, has been appointed village health officer. Dr. Parker is a graduate of the University of Minnesota and served three years as an army physician, followed by establishment of a practice in Virginia, Minnesota, before moving to Mountain Iron.

* * *

Dr. C. W. Lundquist, who has been assistant to Dr. E. K. Rowles at the Rood Hospital in Coleraine, has been transferred to the Rood Hospital in Hibbing. Dr. Richardson, for the past year house physician at the General Hospital in Minneapolis, will take Dr. Lundquist's place at the hospital in Coleraine.

* * *

Dr. Frank A. Krusen, Dr. Louis J. Stuhler and Dr. Lawrence M. Randall, all of the Mayo Clinic, Rochester, attended the first international conference on fever therapy held in New York March 30 and 31 at the Hotel Waldorf-Astoria. On the final afternoon of the

conference they discussed "Fever Therapy Plus Additional Local Heating in the Treatment of Gonorrheal Infections."

* * *

Dr. George E. Cardle of Brainerd has become associated in practice with Dr. E. F. Jamieson of that city. Dr. Jamieson is now in Chicago taking postgraduate work in ophthalmology and otolaryngology at the University of Illinois, College of Medicine. Upon Dr. Jamieson's return he will specialize in eye, ear, nose and throat ailments.

* * *

Bemidji Passes a Fracture Resolution

The following resolution was presented by Dr. D. H. Garlock to the Board of Health on February 25, 1937, and was unanimously approved. Copies of the same were placed on file with the City Clerk of the City of Bemidji.

RESOLUTION:

(Attendant—splints required.) No person, firm or corporation shall operate or cause to be operated any ambulance, public or private, or any other vehicle commonly used for the transportation or conveyance of the sick or injured, without having such vehicle equipped with a set of simple first aid and splint appliances approved by the Board of Health and having in attendance at all times such vehicle is in use, a person who has obtained a certificate of fitness as an ambulance attendant from the Board of Health.

Any person desiring a certificate as an ambulance attendant shall make application in writing therefor to the Board of Health. Before the issuance of any such certificate the applicant therefor must present evidence of his qualifications to fill such position and must demonstrate to the satisfaction of the board of health his ability to render emergency first aid and to apply approved splints to arm and leg fractures.

This resolution shall take effect and be in force thirty days after the above date.

* * *

Opening for Physicians and Clinical Pathologist

For the second time in a month, the California State Personnel Board has waived residence requirements in its search for qualified medical men, and is holding an examination which will be open to candidates in all parts of the United States. The position for which the new examination is being given is that of Physician and Clinical Pathologist, paying a salary of \$200 a month plus maintenance for the doctor and his family. The position involves work in the various institutions operated by the State of California.

To be qualified to take the examination, physicians must have a license to practice medicine in the State of California or be able to secure one, and must be graduates of an approved medical school with three years of experience in the licensed practice of medicine with specialization in clinical pathology, bacteriology, and serology, or some other equivalent combination of education and experience. Age limits for candidates are twenty-six to fifty years. Applications must be filed with the California State Personnel Board, Sacramento, California, before April 24, as the examination will be held May 1.

HOSPITAL NEWS

Dr. Donald McCarthy was elected president of the Board of Advisers of Franklin Hospital at the annual meeting held the latter part of February. Dr. F. G. Benn was elected vice president and Dr. A. E. Cardle, secretary of the Board.

* * *

Dr. Clifford Erickson of Fertile, Minnesota, has become associated with the State Hospital at Fergus Falls and will fill the vacancy on the staff occasioned by the resignation of Dr. John Lohmann who has entered private practice at Jasper, Minnesota.

* * *

A new addition is to be made this spring to the hospital operated by Dr. V. H. Gardner at Fairmont, increasing the number of rooms by five.

* * *

Two associate physicians have been added to the staff of the United States Veterans Hospital at St. Cloud. Dr. G. J. Dobynn of Phoenix, Arizona, and Dr. Eugene R. Inwood of Medford, Oregon, will undergo the usual training for associate physicians entering veterans hospital service.

* * *

The installation of new equipment and changes in personnel of the nursing staff have recently been made at Community Hospital, Farmington. A delivery room with new equipment is to be added later, also new oxygen apparatus and fracture bed. Miss Alice Schertz has been named superintendent of the hospital.

STATE MEETING PROGRAM

(Continued from Page 258)

NORTHWEST INDUSTRIAL MEDICAL CONFERENCE

1:00 P. M.

Presiding—M. W. ALBERTS

New Automobiles and New Fractures

H. B. MACEY, Rochester

Peripheral Nerve Injuries

A. A. ZIEROLD, Minneapolis

Review of the Treatment of Burns

R. F. MCGANDY, Minneapolis

Certain Derangements of Knee Joint

C. C. CHATTERTON, Saint Paul

Treatment of Os Calcis Fractures

O. W. YOERG, Minneapolis

Physical Therapy in Relation to Industrial Medicine

F. H. KRUSEN, Rochester

Industrial Panel

A. W. ADSON, Chairman, Rochester

Accident statistics show that the most dangerous place in an automobile is the seat beside the driver. Divorce Court records prove it to be a dangerous place, too.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

International Hospital Association

The fifth Congress of the International Hospital Association will meet in Paris, July 5 to 11, 1937. The Congress will be addressed by members from France, Switzerland, Germany, England, Canada and the United States on matters pertaining to hospitals. Members of the Association will pay a fee of 60 francs, non-members 100 francs, while "observers" tickets not entitled holders to participate in discussions may be obtained for 30 francs. Numerous study and sight-seeing tours have been arranged in connection with the Congress.

For information address M. A. Chenevier, Secretaire General, 3 avenue Victoria, Paris (4e Arr.), France.

Kandiyohi-Swift-Meeker County Society

The March meeting of the Kandiyohi-Swift-Meeker County Medical Society was held at the Lakeland Hotel, Willmar, on Wednesday the 10th, at six-thirty.

Dr. Kenneth Buckley, of Minneapolis, guest speaker presented the subject, "Orthopedic Problems of the General Practitioner." Dr. Buckley, in addition to being an outstanding man of his branch of medicine, is devotee of the great outdoors, and a hunter of big game in the wilds with both gun and camera. As a part of his talk, he told of a trip in the seldom visited places of the Canadian Rockies and illustrated his remarks with stereopticon views.

Minneapolis Surgical Society

Executive officers and two directors were elected at the meeting of the Minneapolis Surgical Society held March 4 as follows: Dr. Otto W. Yoerg, president; Dr. E. A. Regnier, vice president; Dr. Harvey Nelson, secretary-treasurer, and Dr. Daniel A. MacDonald and Dr. William A. Hanson, executive council members.

Wabasha and Winona Counties Joint Meeting

The sixth annual joint meeting of the Wabasha and Winona County Medical Societies and the twelfth annual dinner tendered by the Sanatorium Commission to the physicians of the counties served, was held at Buena Vista Sanatorium, Wabasha, Monday evening March 8.

There were twenty-nine in attendance, including Winona and Wabasha County physicians, officers of the State Medical Association, members of the Sanatorium Commission, and invited guests. Dr. B. A. Flesch, president of the Wabasha County Medical Society, acted as toastmaster.

The following program was presented:

"Problems of the Minnesota State Medical Association"—Dr. A. W. Adson, president, M.S.M.A.

"Our Relation to the Social Security Problem"—Dr. E. A. Meyerding, secretary M.S.M.A.

WOMAN'S AUXILIARY

"The Nervous Patient," by Dr. A. E. Meinert, Wino-

"Present Trends in the Diagnosis and Treatment of tuberculosis" with demonstration of films—Dr. F. F. Illahan, medical director of Pokegama Sanatorium.

"The Management of Essential Hypertension: Conditions and Indications for Surgical Treatment"—Dr. A. J. Adson, Mayo Clinic.

The program was planned and arranged by Dr. Russell H. Frost, superintendent and medical director Buena Vista Sanatorium.

WOMAN'S AUXILIARY

MRS. E. M. HAMMES, *President*,
1456 Summit Avenue, Saint Paul

MRS. A. A. PASSER, *Editor, Press and Publicity*, Olivia

THE Midwinter Board Meeting of the Woman's Auxiliary was held at the Y.W.C.A. in Minneapolis, February 27. Mrs. E. M. Hammes presided at the business session which included reports of officers, chairmen, and county presidents. Thirty board members from various points in the state were in attendance. Mrs. E. V. Holtz, president of Ramsey County, reported that about \$55.00 had been made on the series of play reviews given under the direction of Mrs. Herman Kesting. Ramsey County Auxiliary held a Public Relations Tea on March 22 to which eighty-eight officers of lay organizations were invited to be guests of the Auxiliary. Hennepin County Auxiliary will sponsor a Card Party Luncheon on Easter Monday in the library of the Medical Arts Building in Minneapolis.

A nominating committee for the annual meeting election in May was elected by the Board Members as follows: Mrs. A. A. Passer, Olivia; Mrs. Martin Nordlund, Minneapolis; Mrs. G. T. Nordin, Minneapolis; Mrs. S. S. Hesselgrave, St. Paul; and Mrs. F. J. Elias, Duluth.

Speakers at the luncheon following the business session were Dr. J. L. McLeod of Grand Rapids, State Senator for the 52nd District, whose topic was "A Glimpse at Legislative Problems," and Mrs. Harlow Hanson of Minneapolis, Commander of the State Cancer Committee for the Women's Division.

Plans for the Annual State Meeting to be held in Saint Paul in May were outlined by the State President, Mrs. Hammes.

A MESSAGE TO THE MEMBERS OF THE STATE MEDICAL AUXILIARY

The occasion of our mid-winter Board meeting is a good opportunity to look forward and backward, and generally to take stock of our auxiliary year.

In my opinion, the auxiliaries are doing splendid work, increasing their membership, increasing their subscriptions to *Hygeia*, entertaining conventions, and giving liberally to various medical charities.

After considerable correspondence and several visits to auxiliaries, I appreciate, as never before, the difficulties of the smaller auxiliaries, and I congratulate them on the fine way they have carried on.

In some auxiliaries, a closer coöperation among the women would be especially desirable. In such cases I think auxiliary members should make an extra effort to work together. For one afternoon a month, let us all make the most of our common interests for the good of the one thing all of us have in common—the Medical Profession.

The doctors have asked us to coöperate with the Cancer Committee of the Minnesota State Medical Association by supporting the Women's Field Army for the control of cancer.

Arrangements are progressing for the Annual Convention in May, and it is not too early to plan for the exhibits, which we hope will be better than ever before. We urge you to come to St. Paul in May and plan (if a doctor's wife can plan) to be present all three days at the convention. There will be instructive and worthwhile meetings, and an enjoyable social program is being planned by the Ramsey County Auxiliary, who will extend to you a very warm welcome.

DOUGLAS HAMMES

COUNTY AUXILIARIES

Mower County

Regular meetings of this Auxiliary are held once a month. After the business session the members fold surgical dressings for the hospital. Money has been earned through the sale of magazines. A card party netted the Auxiliary sixty dollars. This year a surgical light was bought for the St. Olaf Hospital. The April meeting will begin with a luncheon at the New Austin Hotel. Mrs. P. A. Lommen is president and is assisted by Mrs. J. J. Morrow, vice president; Mrs. Paul Leck, secretary, and the treasurer Mrs. J. K. McKenna.

* * *

St. Louis County

Two subscriptions to *Hygeia* were given to the Library by the Auxiliary at the January meeting. A report of the Philanthropic work was given by Mrs. W. A. Coventry who told of the baskets that were given to the poor at Christmas. The meeting was held at the home of Mrs. Eckman on London Road with Mrs. H. S. Forbes, president, presiding.

Mrs. D. W. Wheeler gave a talk on "Marionettes in Occupational Therapy." The talk was illustrated by marionettes made by Mrs. Wheeler. The February meeting was a valentine party held at the Lincoln Hotel.

* * *

Washington County

Mrs. E. M. Hammes, state president, was the speaker at the regular Auxiliary meeting held on February 9, at the home of Mrs. R. J. Josewski, in Stillwater. Mrs. R. J. Josewski, who is state treasurer, attended the board meeting in Minneapolis in February, also Mrs. D. Kalinoff and Mrs. J. H. Haines of Stillwater.

PROCEEDINGS of the MINNESOTA ACADEMY of MEDICINE

Meeting of February 10, 1937

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, February 10, 1937. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the president, Dr. E. M. Jones.

There were forty-two members present.

Dr. S. Marx White read the following memorial of the Necrology Committee:

Richard Olding Beard

RICHARD OLDING BEARD was born December 20, 1856, at Tollington Park, Middlesex, England, the son of Richard and Anne Beard. His father was a manufacturer. He was educated at Camden House Academy, Brighton, England, and came to the United States in 1869, settling first in Chicago. He was engaged as book buyer and stock clerk for two large book concerns for a period of about eight years. Graduated from the Department of Medicine of the Northwestern University in 1882, he came at once to Minneapolis, Minnesota, where he engaged in the active practice of medicine. He was Assistant Commissioner of Health from 1886 to 1889.

He was one of the founders of the Medical School of the University of Minnesota in 1888 and took an active part with Dean Frank Fairchild Westbrook in the movement which resulted in the unification of medical teaching in this state at the University of Minnesota in 1908. He was Secretary of the Faculty of the Medical School from 1888 to 1903 and from 1906 to 1925, and was Head of the Department of Physiology from 1888 to 1912. Holding the Professorship of Physiology in the Medical School from 1888 to 1925, he retired from active teaching in the latter year, becoming Professor Emeritus. He founded the School of Nursing at the University of Minnesota in 1909. This was the first true University Nursing School. He was active in the organization of the Central School of Nursing at the University of Minnesota in 1921, uniting the nursing services of four major hospitals with the school. He also initiated movements to establish endowment funds for the Nursing and Medical Schools of the University.

Upon retirement from active duty in the University, he was engaged in the direction of public health work, serving as Executive Secretary of the Health Council of the City of Minneapolis and the County of Hennepin from 1925 to 1932. During a part of this time, also, he was active as chairman of a voluntary committee for the promotion of legislation to establish a psychopathic hospital at the Medical School. Upon retirement in 1932 from public health work, he devoted himself to writing. His death cut short a monumental task to which he had laid his hands, that of writing a history of the Mayo Clinic. During the early part of his active life he wrote many articles for medical journals and later gave addresses on medical and nursing education

and in public health interests in thirty-four states and the Union.

His relation to the Minnesota Academy of Medicine is of interest at this point. He was a Charter Member in the organization, founded in 1887. There is some question as to whether there were 37 or 38 charter members, but there is no question as to his status—he served as the Minneapolis Secretary until October 1889. During this same period Dr. E. C. Spencer served as Secretary for St. Paul. By October, 1889, co-secretaries seemed to be no longer necessary and Dr. Beard was elected Secretary-Treasurer, an office he filled until October, 1903, when he was succeeded by Dr. Arthur W. Dunning. On October 3, 1906, he was elected President and his presidential address, read at the meeting of November, 1906, was entitled: "The Relation of Physiological Chemistry and Physiologic Microscopy to Medical Practice." Indicative of the character of his interests are the titles of the first two papers he read before the Academy, the first on June 1889, on "The Causes of Infant Mortality" and the second in 1891, on "Physiology of Sleep and the Physiologic Treatment of Insomnia." Dr. Beard was elected an honorary membership in the Academy on April 15, 1907.

He was a member of Alpha Kappa Kappa fraternity; honorary member of Hennepin County Medical Society; Minnesota State Medical Association, State Organization of Public Health Nursing; Fellow of the American Medical Association and the American Public Health Association; member of the American Hospital Association; honorary Fellow (formerly Secretary-Vice-President and President) of the Minnesota Academy of Medicine; and an honorary member of the National League of Nursing Education.

Dr. Beard stood foursquare for everything in which he believed. He was a trenchant speaker and fluent writer with an unusual command of the English language. His many students remember well his clear-cut characteristics of speech and action. He took an effective part in the movement which resulted in the affiliation of the Mayo Foundation with the University. Following that, he became the outstanding leader in the development of nursing education in Minnesota, a leadership which has had its effects far beyond the confines of this state. Dying just a few months short of his eightieth birthday and invalidated for the great part of the last year and a half of his life, he was unable to complete his last great wish—that it might be he who should write the first real history of the Mayo Clinic and its founders. His initiative, unremitting energy and determination were an example to all.

The Committee:

J. F. CORBETT,
H. L. ULRICH,
S. MARX WHITE, *Chairman*

The scientific program followed.

SPINAL CORD TUMOR

E. M. HAMMES, M.D.

Saint Paul

Dr. Hammes reported two cases of spinal cord tumor: (1) a typical textbook case, and (2) a most atypical case with rapid onset, a remission of several months, and a sensory level four dorsal segments lower than the tumor mass.

Case 1.—The patient was a female, aged thirty-five, who was referred to us by W. C. Carroll, St. Paul, December 12, 1935. The family and personal histories were negative except for an appendectomy at the age of 23 and a cholecystectomy at the age of 28.

In July, 1934, she began to have pain in the upper right abdominal quadrant. This manifested itself only at night while lying down. Because of continued pain and loss of sleep she lost 28 pounds during the following year. About July, 1935, one year after the onset of her pain, she noticed a slight stiffness in her knees and ankles. Her gait gradually became unsteady, especially when walking in the dark or with her eyes closed. This stiffness was more pronounced in her right leg. About this time she noticed some numbness in her toes which gradually extended upward to the level of the knees. During the early part of November the right leg began to tire easily, and the knee and ankle had a tendency to "give way." There had been some edema of both ankles since the middle of October.

The pain continued, was aggravated by coughing and sneezing, and on November 3, 1935, an exploratory laparotomy was performed under spinal anesthesia. Numerous adhesions were severed, but the pain continued.

Neurologic examination on December 12, 1935, revealed the following: Cranial nerves and upper extremities negative except for a slight intention tremor of the right arm. The Romberg was positive with a tendency to fall to the right. She walked with difficulty and with a definitely spastic gait. Both lower extremities were definitely spastic, the right more marked than the left. Both knee jerks were markedly increased with a bilateral patellar clonus. Both ankle jerks were definitely increased with a bilateral ankle clonus. There was a bilateral Babinski. While lying down she was unable to execute the movements with the left leg more readily than with the right leg. There was a bilateral ataxia with the knee-heel test. This she executed with the right leg with great difficulty. There was no evidence of muscle atrophy, but slight edema with definite pitting of both ankles. The lower abdominal reflexes were absent; the upper ones were questionable. Sensation was normal over the face, both upper extremities, and the chest. On the right side about two inches above the umbilicus there was a band about one inch wide extending around the right upper abdomen. This band was somewhat hyperesthetic to touch and was as compared to the left side. Below this there was a small band where touch and pain and temperature sense were quite normal. Immediately below this about

one inch above the umbilicus and from there down over the remainder of the right trunk and right leg, touch, pain and temperature sense were somewhat impaired but could be definitely recognized. Over the anterior surface of the right thigh to a short distance below the knee there was an indefinite area of hyperesthesia where pin pricks were quite painful. Over the left trunk from the level of the umbilicus, and over the entire lower left extremity, touch, pain and temperature sense were impaired but could be recognized. Position and deep muscle sense were lost in both lower extremities. Vibratory sense was lost over both ankles and both knees, with some impairment on the pelvic brim.

Her hemoglobin was 78 per cent; blood pressure 122/74; urine normal. The blood Wassermann reaction was negative.

On January 6, 1936, a lumbar puncture was performed. The spinal fluid pressure was 14 mm. of mercury with some evidence of block. The spinal fluid presented a Nonne Froin syndrome. It was xanthochromatic and coagulated to a solid mass within thirty minutes. The Wassermann and colloidal gold tests were negative. Because of the spontaneous coagulation, no further tests could be made. There was no change in her symptoms following the lumbar puncture.

Roentgenologic studies of the spine were negative.

A diagnosis of non-malignant intradural extramedullary cord tumor, located on the right side at the level of the eighth dorsal segment, was made. On January 27, 1936, a laminectomy was performed by Dr. Carroll, and a tumor was found at the level of the eighth dorsal segment, intradurally and attached to the meninges. This was easily removed. It was the size of a large hazelnut.

The microscopic diagnosis was a meningioma. The patient made an uneventful convalescence.

Examination on March 6, 1936, was entirely negative except for some hyperesthesia over both thighs and some subjective complaint of stiffness of the toes.

Case 2.—A male, aged thirty-six, a farmer, was referred to us by Drs. Kalinoff and Brekke, Stillwater, Minnesota, on October 25, 1935.

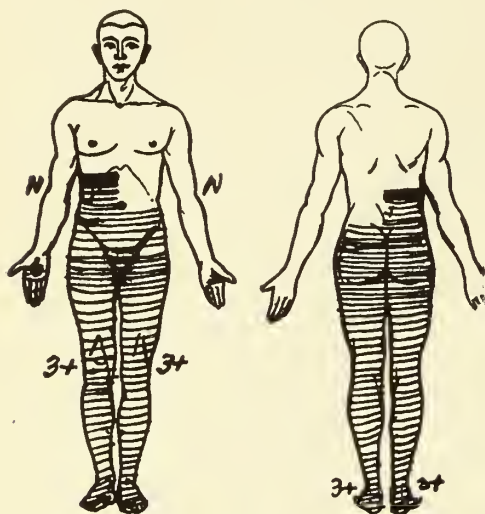
The family and personal histories were essentially negative.

In October, 1934, the patient developed some pain in his left hip. This was constant for a week and then subsided. About two weeks later he developed marked attacks of flatulency and belching. This continued and on November 17, 1934, an appendectomy was performed, without relief. When he began to get about following the operation he noticed some weakness in his legs, especially the right one. He also had some involuntary urination which subsided in two weeks. The weakness in his lower extremities gradually grew worse. About January, 1935, both legs had become so weak and spastic that he was unable to walk without assistance. He also had a return of his involuntary urination. This continued until about May, 1935. He began to improve so that during July, August and September, he was

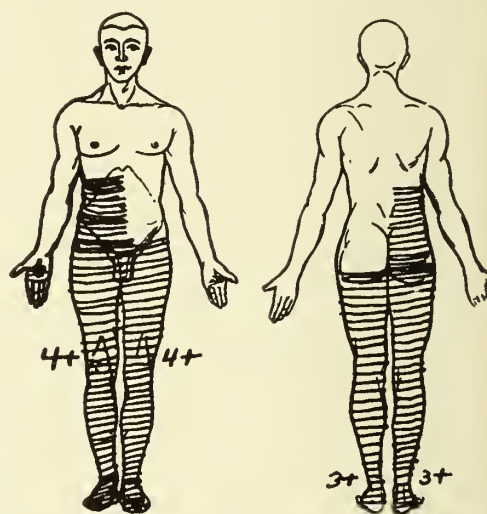
able to attend to his work on the farm, plow, run a mower, and walk over a mile daily. Early in October, 1935, he had a rapid return of his symptoms. His lower extremities became spastic with occasional involuntary

there was some sensory impairment. Over this are the prick of a pin gave him a burning feeling.

A lumbar puncture was performed on October 2 and revealed the following: The spinal fluid was clear



Case 1. Sensation: Over dark band—hyperesthesia. Over shaded area—tactile, pain and temperature sense impaired. Deep muscle and vibratory sense lost.



Case 2. Sensation: Over shaded area—tactile, pain, temperature, vibratory and deep muscle sense are impaired.

jerkings, so that he was unable to walk without assistance. He was unable to void and had to be catheterized. There was no pain at any time.

About October 20, 1935, Dr. Kalinoff performed a lumbar puncture. The spinal fluid was yellowish, the Kolmer and Kline were negative, colloidal gold curve 1233443211.

The neurologic examination on October 26, 1935, revealed the following: The pupils were equal and round and responded to light and accommodation. The fundi were normal. The fields of vision were normal on rough testing. The eye movements were normal and there was no nystagmus. All other cranial nerves were normal. Both upper extremities showed normal reflexes, normal sensation, normal muscle strength, no ataxia, and no tremors. We were unable to test the Romberg because he was so spastic and was unable to stand alone. Both lower extremities were markedly spastic with an occasional jerking of the musculature. There was a bilateral ataxia with the knee-heel test. Both knee jerks were markedly increased, with a patellar clonus. Both ankle jerks were markedly increased and there was a bilateral ankle clonus. There was a bilateral Babinski. There was no evidence of atrophy or other trophic changes. He was unable to walk without a cane. The abdominal and cremasteric reflexes were absent. Sensation was normal in the face, both upper extremities, and the upper portion of the trunk. From two inches above the umbilicus on the right side over the right half of the abdomen and the entire right leg, touch, pain, position, and deep muscle sense were impaired. On the left side from the level of Poupart's ligament down over the entire left leg

pressure 8 mm. of mercury, no evidence of bloc; cells, a positive globulin, a negative Wassermann, and a colloidal gold curve 1234221000. Quantitative protein 150 mg. per 100 c.c. All other laboratory findings and roentgenologic studies of the entire spine were negative.

Because of the high protein content, an intramedullary cord tumor was considered, but, in the absence of a spinal bloc and with the history of a marked remission during the summer of 1935, a diagnosis of multiple sclerosis was made. He was placed on quinine hydrochloride and triple typhoid vaccine. His bladder condition improved considerably, but there was no change in his sensory or motor symptoms. Within a month he had a return of his bladder symptoms.

On January 10, 1936, the spinal fluid was yellowish, there was some evidence of bloc, and the quantitative protein was 100 mg. per 100 c.c. The sensory level remained constant, and a diagnosis of an intramedullary cord tumor at the level of about the seventh dorsal segment was made.

On January 22, 1936, Dr. Robert Earl performed a laminectomy, removing the fourth, fifth and sixth dorsal spinous processes. The cord appeared anemic, there was no pulsation, but no evidence of tumor or obstruction could be found. Because of the marked hemorrhage, further exploration seemed inadvisable.

The patient had an uneventful convalescence but no improvement in his symptoms.

On March 6, 1936, Dr. Earl performed another laminectomy and removed the second and third dorsal spinous processes. At the level of the fourth dorsal segment under the second dorsal spinous process an in-

intramedullary tumor about the size of a hazelnut was found. This was infiltrating and could not be removed. A small biopsy revealed that the tumor was a glioma. The surgical recovery was uneventful, and there was improvement in his symptoms. The patient is still alive.

Discussion

DR. H. Z. GIFFIN (Rochester): I would like to ask Dr. Hammes how often he sees a cord tumor that does not cause pain which is relieved by moving around at night?

DR. HAMMES: The pain is relieved when the patient is up and aggravated while in the recumbent posture, because in the sitting posture the tension of the posterior roots is lessened, due to the slight flexion of the vertebral column. This relief I believe occurs only in cord tumors so located that they produce some direct pressure on the posterior sensory roots.

DR. GIFFIN: What percentage of spinal cord tumors do not have that symptom?

DR. HAMMES: I cannot give the percentage, but we do not usually find cases in which a change of position has very little effect, if any, on the pain itself.

DR. S. MARX WHITE (Minneapolis): Do you frequently find cases in which the tumor is located in the upper dorsal segments and the sensory level indicates a much lower dorsal segment lesion, such as occurred in our second case?

DR. HAMMES: The marked difference between the sensory level and the location of the tumor is quite frequent. In the second case the tumor was small and intramedullary. The main pressure was probably exerted on the long posterior fibers, while the laterally placed sensory fibers escaped. The more centrally placed fibers, i.e., those nearer the posterior septum, control sensation in the lower portion of the trunk and lower extremities. This may explain the marked difference between the sensory level and the tumor in this case.

DR. WILLIAM DAVIS (Saint Paul): I was interested in what Dr. Hammes said about lying down increasing the pain, and that the pain was better during the daytime, and that it was due to pulling on the sensory roots. Wouldn't that explain what I have noticed in several cases of herpes zoster, that the patients have less pain when upright, especially in cases of herpes zoster where the dorsal or lumbar nerves are affected?

DR. HAMMES: I do not know, but that would seem a logical explanation.

DR. W. H. HENGSTLER (Saint Paul): One of the interesting things about that second case was that the man showed early bladder involvement. That is an interesting point in the diagnosis of intramedullary tumors. They frequently show bladder involvement before anything else. I think it is an important thing that we had bladder involvement early in the disease, from the diagnostic standpoint.

A SUGGESTION IN THE TECHNIC OF CHOLECYSTECTOMY FOR THE COMPLICATED CASE OF GALLBLADDER DISEASE

HARRY P. RITCHIE, M.D.

Saint Paul

Dr. Harry P. Ritchie, of Saint Paul, read a paper on the above subject, and showed lantern slides of the technic of the operation.

Abstract

A plan for removal of the gallbladder was suggested for those cases wherein a risk of injury to structures about the gallbladder is possible in the attempt at cholecystectomy by the formal up-down or down-up methods of procedure.

The first step is to split the gallbladder by a median incision, a distance from the dome to a point where the opening of the cystic duct is identified from within. The second step is to "wing" the gallbladder by two parallel incisions made in the same direction as the first, and far enough away from the normal attachments of the gallbladder to the liver to preserve them completely. The "wings" of the gallbladder are removed. These two steps leave a situation which can be pictured as a ladle, the handle of which is the strip of the gallbladder wall with its mucous membrane lining and its normal attachments to the liver; the cup of the ladle is the mucous-membrane-lined base of the gallbladder. The third step is the dissecting of the mucous membrane of the handle and the cup away from the wall, thus removing the mucous membrane entirely. The fourth step is the suturing of the wall of the cup about a drainage tube and the suturing of the wall of the handle to diminish raw surfaces and control bleeding.

The main objection to the plan is that, by opening the gallbladder so widely, infectious agents are released upon the peritoneum. This is a valid objection, which the surgeon must consider in each case on the question of cholecystotomy and drainage on the one hand, or the attempt to remove the gallbladder by formal methods under difficult and dangerous circumstances.

The justification for the procedure is found in the studies of Andrews on the infectious nature of the gallbladder contents. Andrews questions the appropriateness of the term "empyema of the gallbladder." His studies fit into the clinical experiences of the writer in sixteen cases of cholecystectomy performed by the above-described method over a period of fifteen years. In this small series of selected cases, the mortality has been nil. In only one case was there postoperative concern; the story of this case was reported in detail.

Emphasis was made in the plea that such unusual surgery should not be interpreted as a substitute for formal steps, but was offered only as an emergency procedure in certain combinations of circumstances. The plan meets the surgical principle of any cholecystectomy, which is the removal of the mucous membrane of the gallbladder, and eradicates the danger of injury to the

common duct and traumatism to and exposure of denuded surfaces of the liver.

Discussion

DR. E. M. JONES (Saint Paul): Dr. Ritchie's paper is very interesting. These severe gallbladder cases often give the surgeon a great deal of concern. I recall two cases in particular, in which it would have been wiser to have followed some such procedure. In doing a cholecystectomy, the clamps applied to the cystic duct cut through. It was necessary to apply the clamps to the cystic artery and the cystic duct and leave the clamps in situ. Fortunately, both of these patients recovered.

DR. RITCHIE (in closing): There are causes of obstruction of the biliary ducts other than surgical traumatism, but the surgeon is challenged when this condition follows operation. There are procedures in the literature which remove most of the wall and mucous membrane, leaving a part of the gallbladder with the normal attachments to the liver, just as I have illustrated. Thorek does so, then destroys the mucous membrane of the handle and cup with the endotherm, brings over the falciform ligament and sews it to the outer margin of the handle. Raymond McNealy iodinezes the mucous membrane after winging the gallbladder and uses the ligament to protect the peritoneal cavity. Denegre Martin, of New Orleans, in 1921 and again in 1926, reports a series of cases treated along similar lines. All of them report satisfactory recoveries. When I read their reports, I wonder whether I have made a mountain out of a molehill. But I believe the surgical dissection of the mucous membrane is founded on proper principle. As I pointed out in the paper, what I suggest is that an old gynecological operation be applied to the complicated case of gallbladder disease.

MALIGNANT HYPERTENSION

MOSES BARRON, M.D.

Minneapolis

Abstract

There are several synonyms, such as malignant nephrosclerosis, malignant arteriolar sclerosis, malignant phase of essential hypertension. Essential hypertension is extremely common. It was first identified after the invention of the sphygmomanometer by von Basch in 1893, separating essential hypertension from that associated with glomerulonephritis. Volhard differentiated between "pale" hypertension of nephritis and the "red" hypertension of the essential type. The former is supposed to be associated with a pressor substance circulating in the blood which is liberated in the later stages by the kidney parenchyma. The latter is the result of arteriosclerotic changes with hypertrophy of the elastica and hyalinization in the precapillary arterioles. Constitution seems to be the only definite etiological factor so far known. Essential hypertension is not common before 40; is most common between 50 and 60. The histology shows a degenerative change in the peripheral

arteries and arterioles producing rather rigid tubes, increasing the peripheral resistance. In the early stage there is increased vasomotility with marked fluctuation in the blood pressure. This is elicited by Brody's "cold" test for early stages of hypertension.

The benign hypertension is a chronic ailment, and may run for ten to twenty-five years. The termination is either from congestive heart failure, coronary disease or cerebral hemorrhage. About ten per cent of deaths are due to renal insufficiency. A few of the kidney deaths are due to a gradual obliteration of individual glomeruli resulting in shrinking of the kidney. This may go on to renal insufficiency. This type, however, is not included in malignant hypertension.

Another small group may be the result of a glomerulonephritis being superimposed upon the benign hypertension.

By malignant hypertension is understood a condition in which there is usually a history of hypertension of longer or shorter duration, upon which there is superimposed a rapidly developing and progressive renal insufficiency. The blood pressure rises, the patient becomes pale, loses his appetite, develops weakness, becomes apathetic, sensorium becomes cloudy; there is usually a complaint of severe headache. Examination shows a very high blood pressure, very little edema as a rule, more or less anemia, heart enlarged and pounding, and eye-grounds show evidence of an angiospastic condition of the blood vessels with degenerative changes in the retina; the picture is what is known as hypertensive neuroretinitis or neuroretinopathy. There often is a congestive heart failure associated with it but the may be mild or even severe degrees of heart failure accompanying the kidney change. It occurs principally in younger persons between thirty and forty-five. The blood chemistry will show a retention of metabolites and the patient will proceed rapidly into true uremic coma and will die in uremia, often in convulsions.

The clinical picture is, therefore, one which starts as a benign hypertension, upon which is superimposed the clinical findings of a true nephritis which ends in uremia. Pathologically the kidneys show lesions other than those from a glomerulonephritis. There is extensive degeneration often with necrosis of the arteriolar vessels in the kidney and also endarteritis which bring about the ischemia of the glomeruli and the resultant renal insufficiency. Several cases were reported illustrating the condition.

Discussion

DR. JOHN F. NOBLE (Saint Paul): Dr. Barron approached me just before the meeting and inquired whether or not I was the only member of the department of pathology present. He seemed relieved when he found I was the only representative present. I feel his pathological concepts sound and orthodox. With reference to his clinical description of the red and pale hypertensive patient, representing respectively the case of malignant hypertension and the patient with chronic glomerulonephritis, let me say that, while early in the disease this may be of some value, later when uremic

velops, the patients become very anemic in both instances.

One would also like to emphasize the fact that late in the picture clinical differentiation is very difficult and sometimes even histologic studies are confusing. Special stains are frequently necessary to arrive at a correct diagnosis.

The term malignant hypertension is frequently used very loosely. Dr. Barron has defined malignant hypertension as having certain definite characteristics, namely rapid onset of uremia and typical necrotic lesions in the arterioles of the kidney. If this term is to be used, I believe some such definition should be made.

DR. H. W. GRANT (Saint Paul): I think this question is important from the standpoint of the ophthalmologist because he is constantly coming in contact with cases of choked disc associated with the characteristic general picture of which Dr. Barron has spoken. Ordinarily it is usual to recognize in examination of the fundus three types of cases: the arteriosclerotic, the atheromatous sclerosis, and the essential hypertension in its various stages. Atheromatous sclerosis may be present from birth or until sixteen years of age, and it usually has a tendency to disappear until later life. Usually the characteristic picture of essential hypertension is an infiltration of the vessel wall. This has a tendency to produce an infiltration of the arteriovenous crossing, as these vessels have a common outer coat. Not all changes at the arteriovenous crossings are, however, of this nature, as some distortion at this point may be produced by contraction of the arterial wall without any infiltration. Following the infiltration of the vessel wall there are likely to be hemorrhages because of the necrosis which results. It is much less likely that hemorrhage results in an atheromatous sclerosis because of the actual thickening of the vessel wall. Apparently all cases of choked disc dependent upon malignant hypertension do not have characteristic findings. Some are present without headache, which is usually one of the more pronounced symptoms. They do, however, have the piling up of fat in the superficial retinal layers probably due to the fact that the lipid content of the retina is higher than that of any other structure of the body, the brain ranking second. This it is likely to be dissolved out in most sections, but it can easily be demonstrated in flat sections of the retina which are unstained.

DR. BARRON (in closing): Dr. Noble asks about the question of the "paleness" in malignant hypertension. I suggested its cause in the discussion but did not emphasize it enough. The "paleness" is due, first, to the plastic condition of the blood vessels, and, second, to the development of the anemia. It is true that in some cases it is not easy to differentiate nephritis from malignant hypertension by the microscopic sections. In a few cases we have true glomerulonephritis superimposed upon the benign hypertension. In malignant hypertension there is no evidence of inflammatory changes which can be seen in glomerulonephritis. The endarteritis is an important finding emphasized by the authorities and it is not due to inflammation.

As to the question about necrosis, we do not believe that the hyaline change seen in the arterioles of essential hypertension is a necrotic one. It seems to be due to a certain degenerative change of the fibers into hyaline material. The staining reaction is often different from that of necrotic material.

After the scientific program, Dr. Barron showed motion pictures which he had taken last summer on the Academy's trip on the Mayo yacht, and also at a picnic which had been held at Dr. Archibald Wilcox's summer home.

The meeting adjourned.

A. G. SCHULZE, M.D., *Secretary*

Tuberculosis

Reference has been made to the fact that eight diseases registered lower death rates in 1936 than ever before. The one to which the greatest interest attaches is tuberculosis. The decline in its death rate has been practically continuous for 25 years, and there has been a drop of 45 per cent in 10 years and of 76 per cent in 25 years. Eleven years ago, that is, in 1925, an important milestone was passed in the conquest of tuberculosis. Then, for the first time in the history of these insured wage-earners, the tuberculosis death rate fell below 100 per 100,000. Ten years before that, when the mortality rate was 197.8 per 100,000, no one in the whole public health field would have dared to predict that this rate would be lowered over 50 per cent in 10 years. This, however, actually happened. Again, there were few who, even in the middle of the last decade, were optimistic enough to believe that within another 10 years the rate would again be reduced by almost another 50 per cent. Up to 1920 tuberculosis was the leading cause of death among these insured wage-earners; it now ranks seventh.

While it is gratifying that the downward swing of the tuberculosis death rate extended through last year, certain developments in 1936 were not altogether favorable. The decline in the rate from that of the previous year was only 2.9 per cent, as compared with an average annual drop of 7.6 per cent from 1930 to 1935. This retardation in the velocity of the decline must not be construed as too discouraging a development. The downward swing of the mortality rate has been so pronounced that a slowing up in the rate of fall was bound to come. It has happened before within the past 25 years; and there were two years, in fact, when the general downward swing was interrupted by slight increases. Following these interruptions, however, the drop was resumed and was more pronounced than ever. It may easily develop that 1937 will register a decline not far from the average observed from 1930 to 1935.—*Statistical Bulletin*, Metropolitan Life Insurance Co., Jan., 1937.

The first constitutional amendments were drawn by James Madison and submitted to the legislatures of the states on September 25, 1789. The first ten established religious freedom, freedom of speech and press, and the right to petition the government for redress of wrongs. Citizens of those days were determined to reserve to themselves and their several states all possible power; they feared a highly centralized federal government. The amendments were ratified by the required number of states and declared in force December 15, 1791, more than two years after they were proposed.

—Public Relations Committee, Medical Society of the State of New York.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

SENILE CATARACT. Methods of Operating. Third Revised Edition. W. A. Fisher, M.D., F.A.C.S. Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College; formerly Professor of Clinical Ophthalmology, University of Illinois. 153 pages. Illus. Price, \$2.00, flexible binding. Chicago: H. G. Adair Printing Co., 1937.

OPHTHALMOSCOPY, RETINOSCOPY AND REFRACTION. With new chapter on Orthoptics. Fourth Revised Edition. W. A. Fisher, M.D., F.A.C.S. Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College; formerly Professor of Clinical Ophthalmology, University of Illinois. 210 pages. Illus. Price, \$2.00, flexible binding. Chicago: H. G. Adair Printing Co., 1937.

THE INTIMATE SIDE OF A WOMAN'S LIFE. Leona A. Chalmers. 128 pages. Illus. Price, \$1.50, cloth. New York: Pioneer Publications, Inc. 1270 Sixth Ave., 1937.

MATERIA MEDICA, TOXICOLOGY AND PHARMACOGNOSY. William Mansfield, A.M., Ph.D. Dean and Professor of Materia Medica and Toxicology, Union University, Albany College of Pharmacy, Albany, N. Y. 707 pages. Illus. Price, \$6.75, cloth. St. Louis: C. V. Mosby Co., 1937.

OPERATIVE SURGERY. Fourth Edition. J. Shelton Horsley, M.D., LL.D., F.A.C.S. Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va., and Isaac A. Bigger, M.D., Professor of Surgery, Medical College of Virginia, Surgeon-in-Chief, Medical College of Virginia Hospital, Richmond, Va. 1387 pages (2 volumes). Illus. Price, \$15.00, cloth. St. Louis: C. V. Mosby Co., 1937.

ENDOCRINOLOGY. Clinical Application and Treatment. August A. Werner, M.D., F.A.C.P., Assistant Professor of Internal Medicine, St. Louis University School of Medicine; Associate Physician, St. Mary's Group of Hospitals; Physician Endocrine Clinic, St. Louis City Hospital; Staff Member, St. Louis City Hospital, Sanitarium and Infirmary; St. Louis Training School for Mentally Defective Children and the Missouri State Hospital No. 1, Fulton, Mo. 61 pages. Illus. Price \$8.50. Philadelphia; Lea Febiger, 1937.

The author has written a most useful book. It presented in an easy readable style, includes the recent advances in endocrinology and covers the field in more adequate manner than any volume which has appeared so far.

The book is divided into fourteen chapters including the autonomic nervous system, calorimetry, the gland in general, the individual glands, obesity, the skin, the teeth, the hair and the diagnosis of endocrine conditions.

The bibliography is extensive with references at the bottom of each page. Illustrations are well chosen and exceptionally good. Many of them are of the author's own cases. Therapy, so important in this field is dealt with in plain understandable terms and sound. Pros and cons of controversial points are discussed.

Werner is well known for his ability and clinical research in endocrinology. The volume is written from an internist's point of view. As he states in the preface, "To be a good clinical endocrinologist, one must first be a good internist, and the time is not far distant when, in order to be a good internist, one must be a good endocrinologist."

It is one of the few books on general endocrinology that can recommend to the specialist and general practitioner alike.

L. F. HAWKINSON, M.D.

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MINNESOTA MEDICINE

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Number 5

FUNCTIONS OF THE SPLEEN AND THYMUS*

PROFESSOR LEON ASHER

Professor of Physiology, University of Berne
Berne, Switzerland

I FEEL deeply honored in having the opportunity of visiting American universities and American medical societies. It is an especial distinction that you allow a physiologist, a man who is said to be a man of gray theory, to speak before the medical profession. You extend invitations to us to speak on the basic sciences, showing thereby how much the American medical profession is interested in basic sciences and in the unity of all of us medical men.

The subject of my lecture is physiology of the spleen and thymus. Some years ago we knew nothing of the spleen and I will not speak about those dark times. Nevertheless there are special biological and anatomical aspects which ought to have led to our finding out the function of the spleen.

It has been known for a long time that the spleen has to do with the formation of white blood corpuscles, so we shall leave out the discussion of this function. Another very important function of the spleen was discovered by the brilliant researches of Sir Joseph Barcroft. He found that the spleen is a very important depot for blood. He showed through excellent experiments that under various conditions the spleen contracts and in consequence thereof puts out as much as 15 per cent of additional hemoglobin into the circulation. When the body needs more oxygen, the spleen contracts and more hemoglobin is at the disposal of the body.

This has been shown in the dog which anatomically has a spleen with contractile substance. It is a question whether the human spleen has so much contractile substance. Notwithstanding a certain anatomical difference the physi-

ological facts show that the spleen of the human acts just as much as a depot for blood corpuscles as the spleen of the cat and the dog. Under conditions which cause contraction of the spleen, the amount of hemoglobin and the amount of blood corpuscles will run up.

There is another relationship of the spleen to which we are led when we study the chemistry of the spleen. It has been known for a very long time that the spleen contains relatively more iron than any other tissue of the animal body. That must have some significance and an investigator may raise the question whether the spleen may have something to do with iron metabolism. For instance, the spleen might store up iron for use on occasions when the animal body requires more iron. Of course one must never forget that in the animal body the spleen is not the only place where iron is deposited. Every cell has a very small amount of iron, and this small amount is necessary as a catalyzer. We know through the splendid researches of Warburg that iron is necessary for the oxidizing enzyme.

If you want to investigate the iron metabolism of animals, and especially of small animals, you must use very exact apparatus. The principle thing is to safeguard your experiments so that no contamination of iron occurs from the animal's environment. The cage in which the animals are kept should be made out of glass and the animals rest on a perforated plate of glass.

Several years ago we found that when we took out a dog's spleen, the output of iron in the feces was very much greater than in normal dogs. The feces have to be analyzed, because by way of the kidney only very little iron leaves the animal body.

*Read before the Minnesota State Medical Association, Rochester, Minn., May 4, 1936.

Our findings were corroborated by working on the human being. Experiments done in the surgical clinic of the University of Bonn on patients whose spleen had to be removed, showed that there was a greater loss of iron after the removal of the spleen. But other important researches, for instance those by Krumbhaar and Pearce in your country, could not corroborate these facts. After taking out the spleen, they found there was not much difference in excretion of iron. I have had the satisfaction to learn that in a more recent paper which appeared about a year ago, they state that they have found cases in which after taking out the spleen there was a larger excretion of iron.

When, in experiments, one man finds one thing and the other finds the opposite, there are various possibilities. The one man can be right, the other man can be right, or both can be wrong. But I am rather a peaceful man, and I suggest that perhaps both are right, those with negative and those with positive findings. The difference must lie in the conditions, and we were able to find those conditions.

The extirpation of the spleen is not followed by significant changes in the animal body. Extirpation of the spleen from a very young animal has no apparent influence at all. The animal will grow just the same as a normal animal. There is no difference to be observed in muscular activities and the outer appearance of vegetative life is unaltered. One must use special experiments to reveal any difference.

What may be the cause of the lack of symptoms? One possibility is that there exists a compensating mechanism, that very easily the deficiency of the iron metabolism and perhaps also of other functions related to the spleen, known and unknown, are compensated. It might be in the first place that deposits of iron exist in other tissues also. Or it might be that in consequence of the loss of the system of cells in the spleen, the reticulo-endothelial cells in other tissues compensate either by increasing or diminishing their functional capacity. In experiments destined to solve the question of compensation, anemia must be avoided, as anemia is apt to stimulate alterations of function.

Guinea pigs are examples of animals which after splenectomy fail to become anemic. If splenectomy is made by a cautious operation without any bleeding, and afterwards the animal

is well fed, the amount of hemoglobin and the amount of blood corpuscles will be exactly the same with or without the spleen. If you take a series of normal guinea pigs and analyze the amount of iron in the liver, a rather constant percentage of iron is found. But a short time after taking out the spleen one finds that the percentage of iron in the liver has risen very much. In the liver of a normal guinea pig the average value of iron is 0.056 per cent. Three days after taking out the spleen the average value instead of being 0.056 per cent will have risen to 0.09 per cent. There is, therefore, a large increase of the iron content of the liver. The liver being a very large tissue, consequently a very much larger amount of iron is stored up in the liver and you have a complete compensation for the deficiency of the spleen.

These experiments seemed to be very convincing, but of course as soon as you find results exactly as you wish to have them, you must be very careful. So we tried to control our experiments by a different procedure. We said if our conclusion is correct that deficiency of the spleen is compensated by the liver, then one should have an increased output of iron if one were able to abolish or diminish the compensating power of the liver. This is achieved comparatively simply. We know that one can blockade the reticulo-endothelial system by injecting into the living animal an ink or carbon preparation. Injection of a very fine charcoal preparation does not cause any disturbance of the normal animal as we had observed in controls. Extirpation of the spleen of the guinea pig leads sometimes to a large increase and sometimes to a small increase of iron excretion. Afterwards compensation occurs and the excretion of iron may be exactly the same as before. One may even observe (a point of interest) less excretion than before taking out the spleen. When one has awakened the compensatory capacity of the animal body, one meets with an overshooting, the tissues with compensating capacity doing even more than before. But as soon as we blockade the reticulo-endothelial system up runs the excretion of iron. This experiment decisively proves that splenectomy will let the body lose more iron, if one gets rid of the compensatory function of the reticulo-endothelial cells of the liver. By post-mortem examination the success of blockading must be

verified. In microscopic slides the reticulo-endothelial cells are densely filled with charcoal.

I hope that the preceding experiments have demonstrated that one of the functions of the spleen is the regulation of iron metabolism, that the spleen retains a certain amount of iron, stores it up and gives it up when necessary to the cells of the animal body for use.

We will now turn to quite a different function of the spleen, a function which I think is of great clinical importance, and that is the relationship of the spleen to the function of the bone marrow. I don't like to be a historian and shall not discuss the experiments conducted in my institution many years ago, but prefer to speak of a series of recent experiments by which, as we believe, we have demonstrated that the spleen has an inhibitory action on the function of the bone marrow.

What does that mean? That means the following: We come to an understanding of inhibition by applying a fundamental principle of general physiology. Every tissue of the animal body without exception has its autonomic functions. Tissues are able to do their work to a certain degree and within certain limits without any relation to other parts of the animal body. But in the animal body they must be regulated to do more and, according to circumstances, to do less. In part this is the function of the central nervous system by aid of augmentory and inhibitory nerves. The same principle holds good for hormonal control. We have hormones or chemical control in an augmentory, and chemical control in an inhibitory sense. The spleen exerts an inhibitory influence on bone marrow.

To review a few more recent experiments performed in my institution, I will begin with the following experiment. We know that if one injects a 1 or 2 per cent solution of nucleic acid, for instance into a rabbit, a short time after we shall have a production of very many more leukocytes. After splenectomy, injection of the same amount of nucleic acid will cause a much larger increase of leukocytes.

Now we will pass over to another experiment. We begin with a series of normal animals and inject a 2 per cent nucleic acid solution. We carefully measure the rise of white blood corpuscles. After that we take out the thyroid. Now we find that the same amount of nucleic acid injection will cause no change at all. Con-

sequently there you have the reverse of that following splenectomy. The thyroid is a gland which doubtlessly activates bone marrow and has an augmentory influence. We then proceeded to perform splenectomy on the animals without thyroid. To our astonishment (we didn't believe it would come out so beautifully) the result was that the animals with the double operation behaved like normal ones. Taking out the thyroid and the spleen produced an equilibrium. Let us survey the facts to understand the meaning of this equilibrium. Taking out the thyroid has an inhibitory influence on the bone marrow, because the thyroid acts in an augmentory sense. When we take out the spleen we have removed an inhibitory influence. Consequently the bone marrow can be more active than before.

I shouldn't doubt but that many of you will say "This man is very fantastic; that cannot be true." Well, we had the same criticism of ourselves, so we said to ourselves, "We will send all the bone marrow of the animals we have operated on to our friend the pathological anatomist. The pathological anatomist is a man far more serious than a physiologist. A physiologist likes poetry. The pathological anatomist (I hope there is no pathological anatomist in the audience who is by chance a poet) is much less of a poet than we are. Consequently we sent these preparations to our friend the pathological anatomist. He was not informed what had happened but simply received the bone marrow specimens with numbers. What did Professor Wegelin of Berne University, a well known pathologist, known to all of those who have studied the thyroid gland, find? In animals without thyroids, he found evidence which was very clear cut, of greatly diminished activity of the bone marrow, and in animals without the spleen he found signs of increased activity. In animals without either thyroid or spleen, he found the histological picture was exactly or nearly exactly similar to that of the normal animal.

We will now proceed to a new series of experiments, again showing that the spleen has an inhibitory influence on bone marrow. We know from various sources, especially from pediatricians, that if animals are fed with goat's milk an experimental anemia is produced. One can investigate these anemias by either counting the blood corpuscles or by estimating the amount of

hemoglobin in the blood. For instance, if you feed rabbits goat's milk, very soon a very severe anemia will be produced. But if after one has restored the animals from their anemia, the spleen is removed and the feeding with goat's milk is repeated there is still a diminution of hemoglobin, but much less than in the normal animal. What does that mean? By taking out the spleen we have removed a physiological inhibitory influence on bone marrow. Consequently the animal will be more resistant to the harmful effect of feeding it with goat's milk.

All these experiments I think prove my point. They prove that the spleen has an inhibitory influence on bone marrow.

About a week and a half ago, I enjoyed the opportunity of staying at the Ohio State University in Columbus, and visiting my friend and pupil Professor Curtis, who did important research work on the action of diuretic substances in my institution. He has demonstrated some highly suggestive experiments on human beings. He showed me patients in whom he had taken out the spleen on the theory that the spleen has an inhibitory influence on bone marrow and his therapeutic results were absolutely in accord with this theory. I have no doubt that in your country with your splendid surgery and your splendid medical clinics, you will very often meet cases where you will do good by removing the spleen and thus bettering the condition of the patient. Of course, if the result is not the expected one, you must not blame the physiologist if you have performed the operation under a wrong diagnosis. For that we are not answerable.

I have been speaking of the spleen as the tissue which has an inhibitory regulating influence on bone marrow, but you can show it also to have a regulating inhibitory influence on other functions. Everywhere, where the thyroid gland is augmentory, the spleen is inhibitory. One especially clear case where this inhibitory regulating influence comes in, is the sensitivity of the central nervous system. We chose the respiratory center because its sensitivity can be tested by exact quantitative methods. The principle of the quantitative method is to let an animal inspire air with various tensions of CO_2 and to measure the minute volume of respiration; first street air, then air containing so much CO_2 that it has 20 millimeter tension and then air with

so much CO_2 that it has 40 millimeter tension. Since the classical work of Haldane it has been known that CO_2 in the air and in the blood will increase respiration. We can measure the minute volume of respiration very easily. If one studies normal animals for a length of time, one ascertains exactly their response to CO_2 stimulation. Into animals standardized in this way we inject a substance which has been produced by the spleen. We have not as yet a chemically isolated substance from the spleen, but we are able to use a fairly good preparation made by the German internist Schliephake. Injection of this preparation after a certain lapse of time causes the respiratory center to respond much less to a given CO_2 tension. The result is exactly the reverse if we inject thyroxin, because this hormone raises the excitability of the respiratory center.

These experiments have added a new proof of the inhibitory influence of the spleen. It has an inhibitory influence on various functions, while the thyroid is augmentory. These two tissues are part of the big regulating system, one regulating in one sense and the other in the opposite sense. To call this, as one often does, an antagonism is in a biological sense not correct. Only as to symptoms there is an apparent antagonism. In reality every augmentory and inhibitory effect in the animal body acts together in a physiological way and is in harmony with the ends at which the organism tends to arrive.

Let me now in the short time left speak to you on the function of the thymus. I am glad to have an opportunity of giving a brief review of the function of the thymus, because some splendid work has been done in your country by Rowntree, some years after the work done at the Berne institution.

When research work was first begun on the thymus gland, the first thought was that it might have something to do with growth. If it is true that the first love is the best, we ought to return to our first love; in the case of the thymus we do so by returning to the first idea of its having a growth promoting function.

Modern physiology of the thymus begins with the beautiful researches of Basch, Matti, Klose and Vogt, who took out the thymus in quite young animals and found growth was inhibited. This seemed to settle the matter, but then came other papers, outstanding among these being that

of Parker and McClure who did not find the slightest difference in growth. I once more repeat my phrase: One side may be right, the other may be right or both may be wrong. Those who observed retardation of growth objected that the negative results were due to subtotal removal of the thymus while their opponents explained the apparent positive results as due to kennel effects: lack of movement, light and air. The latter explanation is certainly wrong for the positive observations of Matti, because his experiments were conducted during the summer term and the puppies spent a great deal of time in the garden of the Berne Physiological Institution. I remember the very alert puppies playing with children in the garden. Besides, other operations on laboratory dogs, for instance extirpation of the spleen, do not cause retardation of growth.

Nevertheless the question remains how to explain the divergence of observations. We believe we have found the experimental factor which decides whether thymectomy leads to retardation of growth or not. It is the way one feeds the animals. In their paper Parker and McClure state that their dogs were fed with milk and cream, besides other food. This nourishment contained very ample amounts of growth vitamins, so that pharmacologically they wiped out the effect of the lack of the less potent substance in the thymus. That everything depends on how much vitamins the food contains is revealed by appropriate experiments. We will prove what I said. One must take a series of animals and feed them just as little vitamins as possible, just enough for growth. A certain minimum amount is necessary, else growth stops. Our first experiments were conducted on quite young rats. The controls received a diet which in calories and vitamins contained just the sufficient amount for daily slow growth. The experimental animals were given the same nourishment and were injected daily with a substance, which we prepared from thymus about five years ago and called thymocrescin. One milligram per day is sufficient to promote active growth. Thymocrescin is free from protein and lipoids and

gives the reactions of peptides. It has a specific action not possessed by extracts of lymphatic glands on muscles prepared in the same way as thymocrescin, nor do large doses of the total amino acids of meat have a like effect on growth as thymocrescin.

Knowing the fact that one has to safeguard against overdosage of vitamins, we proceeded to re-examine the question of effect of thymectomy. Employing rats, the operation was performed by going deep down into the chest under guidance of bright light to remove every trace of the thymus. Besides normal controls, control animals, in which the whole operation was performed but without extirpation of the thymus were used. All animals were fed with lean meat, a food sufficient for slow growth, but without the abundance of vitamins to compensate for the lack of thymocrescin. Both control series grew equally well, showing that the severe operation on very young animals had no growth-retarding effect. But the growth curve of the animals without thymus demonstrated marked retardation.

A histologic investigation of the epiphyseal growth zone of bone showed that in the animals without a thymus and fed with lean meat, this zone was much less developed than in the normal and the operated rats similarly fed. The picture is not that of rickets but of simply retarded growth.

I will now draw the conclusion. One of the functions of the thymus (it may have others) is regulation of growth. But this lack of regulation only appears if either there are certain diseases (pathology I must leave to my medical friends) or if the food does not contain enough vitamins.

It has been a very great pleasure and privilege to have been enabled to lecture before your most distinguished Minnesota State Medical Association. I hope that, in the short time I have had the honor of being before you, you may have received the impression that there is a unity between us, and for us visitors not to feel this unity is impossible because we are overwhelmed by your splendid hospitality.

INTERPROFESSIONAL RELATIONS—IS THERE A POLICY?*

CHARLES H. ROGERS, Ph.B., Ph.C., Sc.D.

Dean of College of Pharmacy, University of Minnesota
Minneapolis, Minnesota

I WOULD like to discuss with you, for a short time, the subject of interprofessional relations among practitioners in the health sciences. That pleasant and mutually profitable relationships between men and women engaged in these respective science fields would result in a better understanding of one another's problems and would contribute to a more efficient service to those who are sick, may, I believe, be assumed. How these results can be best obtained is a controversial subject upon which many pharmacists, physicians, dentists, and nurses, have expressed their opinions. If the ideas embodied in all of these opinions were incorporated into a single statement of policy, more than likely it would not be understandable to anyone. Those who have the conviction that some policy is desirable for the good of medical service to the public have never attempted to formulate the fundamental and basic principles of all of these suggestions into a concise and understandable statement of policy. I think that most practitioners are unanimously of the opinion there does exist some sort of vague understanding among these professions but they have felt the lack of some definitely expressed formula to guide them. From time to time, some members of our fraternity have implied that special activity in interprofessional relationships by members of any particular group of the health sciences, is motivated either by a desire for personal gain or for aggrandizement. To me such implications signify that those who are bold enough to make these suggestions are totally ignorant of the altruistic motives actuating such endeavors. Surely, it cannot be that they are tacitly subscribing to procedures which they seem to condemn. To avoid misconception, I would suggest the reading of an article by Mr. H. H. Gregg, Jr., entitled: "Interprofessional Relations between Physicians and Pharmacists as Carried on in Minnesota," published in the November

1932 issue of the *Journal of the American Pharmaceutical Association*. Here the motives that stimulated our own Interprofessional Relationships Committee are concisely stated as follows "In our efforts, we have tried to be constructive. We have tried to keep uppermost in our minds at all times, the *welfare of the patient*; and further to be helpful to physician, dentist, and pharmacist." By this and other frank statements will the reader acquire a greater appreciation of the fine work that has been done in this state during the past seven years and also be made fully cognizant of the fact that nothing but altruistic motives inspired some of our most prominent men in medicine, dentistry, and pharmacy, to become leaders in this particular type of interprofessional work. The activities of the Interprofessional Relationships Committee have been conducted on a high plane and in accordance with well-laid plans formulated especially for improving medical service to the patient.

Interprofessional relations imply a mutual and also reciprocal interest on the part of the practitioners of several professions. Any policy pertaining to interprofessional relations, regardless of whether inferred or definitely expressed, must be founded upon at least one sociological condition, namely, that it must accrue to the common good of all. Any policy or principle formulated for the expressed purpose of benefiting a particular group or clique, is unsound and will not survive the test of time. If, on the other hand, those who are charged with the formulation of policies and principles, are motivated with the desire to benefit mankind in general, the product of their endeavors will react reciprocally so as to benefit those who promulgate them. Permit me to illustrate my point by the use of chemical nomenclature. If our human reaction-mixture consists of qualified practitioners plus sound principles and policies, there will be produced high ideas plus better medical service to all patients. If we assume that the functional principles and policies are sound, they then will be-

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come constants in what we will call the socio-professional equation and the reaction will inevitably be a reversible one.

History teaches us that all documents, constitutions, and precepts that have endured, were devised by men who, by training and experience, were qualified to conceive of great things. Any policy on interprofessional relations affects all practitioners in the respective fields of the health sciences, and, therefore, it should be formulated by representative men and women of each profession who not only recognize the professional, economic, and sociological problems of their own group but also are appreciative of the same type of problems in the others. They must understand that the ideal health service to the patient involves a perfect coördination of all health groups in whose functioning no particular member is paramount to or independent of the others. It is not beyond our imaginations to conceive that several centuries ago there were individuals who were not only skilled in the recognition and treatment of diseases but were also proficient in the extraction of teeth, in the compounding of medicines, and even in nursing the sick. Certainly, Francois Gilead, the first apothecary to come to this country in 1535, or Dr. Thomas Wootton, the first physician to be sent by The London Company to participate in the founding of Jamestown, Virginia, were not restricted by professional ethics or by law in so far as the scope of their usefulness to the sick was concerned. It was not until some years later that the American Colonies enacted statutes; *i.e.*, the Virginia Act in 1736; South Carolina Statute in 1751, and others, all of which were attempts at professional differentiation. In this connection, some of the statements included in the proclamation (in French) regulating the practice of surgery made by Don Alexandre O'Reilly, who was the Spanish Governor of Louisiana in 1770, may be of interest to you:

"Medicine embraces three parts, namely: medicine proper, which is the science of recognizing diseases, and the relation which they have with remedies, and the prescribing of the latter with the diet. The other two parts, which are surgery and pharmacy, are its attendants and have their special fields. Surgery includes the use, in general, of the hands and of external remedies. Pharmacy is concerned, generally speaking, with the preparation of remedies."

In 1765, Dr. John Morgan founded the first medical school attached to any college or university in this country—the Medical School of the College of Philadelphia, which, as you all know, was combined, in 1791, with the Medical Department of the University of Pennsylvania to form the present University of Pennsylvania. During this period this eminent man was aided and encouraged by none other than Benjamin Franklin in his attempt to gain recognition for pharmacy as a specific field of endeavor.

During the last one hundred and sixty-seven years, these arts have developed with increasing rapidity into sciences until today those practitioners who are enlightened upon professional advances in fields other than their chosen one, recognize them as highly developed specialties and claim no proficiency or moral right to practice them. A review of the history of medicine and pharmacy for four thousand years also brings us to the conclusion that medicine and pharmacy are definitely specialized departments of the health sciences and that they are separately interdependent. The practitioners of pharmacy, like those who practice medicine, dentistry, and nursing, are qualified by training and experience to participate in the drafting of a policy of interprofessional relations.

Because of the invasion of commercialism in the drug business, not an inconsiderable number of laymen and physicians are skeptical not only of the professional capabilities of the pharmacist but also of the value of the health service that he is daily rendering to them. Careful scrutiny will show that today commercialism has penetrated, to a greater or less degree, nearly all of the professions, however dignified and honorable. It has been said that the only difference between pharmacy and some of the others is that pharmacy displays its "dirty linen" in show windows whereas others keep theirs in a dark closet. Be that as it may, it is my privilege today, as the representative of that profession, to dissipate any such misconceptions if they exist, and to point out what pharmacy has done in the past, is *now* contributing to a better health service, and to outline for you plans for the future.

The fact that the ancient and honorable profession of pharmacy has been exploited in many instances, cannot be denied. For those who are responsible for so prostituting it, we hold no

condonation or excuse. On the other hand, for those pharmacists who are practicing their profession but who for business expediency have been forced to engage in the sale of articles of merchandise other than drugs, medicine, and medical supplies, we are profoundly sympathetic because surveys show that a vast number of them are suffering from nostalgia for more exclusive professional activity—a desire which they cannot afford to gratify. The fact that a large percentage of the gross business done in the average drug store is from the sale of non-professional items, cannot be held by any pharmacist as a valid excuse for giving inferior professional pharmaceutical service to his physician and his clients. In fact, there is no question in my mind whatsoever as to whether a pharmacist, coerced by economic conditions into functioning in the dual capacity of a professional man and a genteel merchant, is precluded from being highly efficient professionally. He is not. The pharmacist who is influenced by his gross income to the extent that he permits his prescription department to become antiquated, as evidenced by an inaccurate prescription balance, old stocks of drugs and chemicals, dirty utensils, dark quarters, etc., should do the only sensible thing from a business standpoint, namely, devote his entire time and all his ability to being a good merchant and cease masquerading under the sign of a splendid profession. On the other hand, the pharmacist who believes his professional activities essential to a well-rounded efficient health service and because of his belief devotes himself to maintaining departments in his establishment exclusively for professional work, will soon find himself and his specialty indispensable to both the physician and the public. It is not difficult for anyone, physician or layman, to identify such an establishment because, upon entering, he is conscious of a professional atmosphere dominating the place, and which seems to have its source in the prescription department. In such a pharmacy the physician will find much that will aid him in the practice of his profession and the layman will become imbued with a feeling of security, confidence, and faith in the medicines dispensed to him there. The statement has just been made that the pharmacist is trained and qualified to be of efficient assistance to the physician in the practice of his profession. The

physician can profit by such a relationship only if he is willing to admit (to himself of course) that there are many things in the medical specialties with which he is not familiar. In these days of rapid scientific development, no professional man can practice safely and progressively and be reliant only upon his own fund of information. If this be true, how can the pharmacist be of service to the physician? I will point out a few of the many ways. The trained pharmacist is a specialist in materia medica and is, therefore, capable and qualified to present to the physician for his consideration, any number of remedial agents of established worth. I think it is generally conceded by experts in medical education that the curricula of medical schools do not include adequate training in materia medica. Most physicians acquire a working knowledge of this specialty after they begin their practice. Because of the rapidity with which new things that are used in the prevention and treatment of diseases are evolved, physicians not infrequently become confused and seek reliable information upon new products. The demand for factual data on these new compounds together with the desire on the part of the doctors to protect the medical profession and the public against fraud, undesirable secrecy and objectionable advertising in connection with proprietary medicinal articles, was responsible for the creation of the Council on Pharmacy and Chemistry of the American Medical Association and the issuance annually of New and Non-Official Remedies. In the not-too-far distant past, so-called detail men were frequently the bane of the physician's existence. Today, this group of men, most of them graduates of colleges of pharmacy, are rendering a service by giving physicians and pharmacists reliable information on new proprietary medicinal products. As a rule doctors appreciate being given this information but so often fail to realize that possibly in the corner pharmacy there is a man who is equally well informed about the newest proprietary medicinal products and also has a wealth of information about standard U. S. Pharmacopœial and National Formulary preparations. This man is willing and glad to impart this knowledge to the physician who seeks it. Not infrequently I am asked why I believe physicians should prescribe, whenever possible, U.S.P. and N.F. products in preference

proprietaries. In my opinion, three of the most important reasons are as follows:

First, by so doing, the cost of medical care will be somewhat reduced. In this connection, whether we are willing to acknowledge it or not, there is always the possibility in our rapidly changing economic and social world, that this may become necessary in order to circumvent a wave of popular opinion in favor of socialized medicine. Furthermore, by making this saving available to the layman, self-medication will be somewhat reduced. I feel quite sure that one of the most pleasant dreams a manufacturer of so-called "patent medicine" could ever have, would be to have a fairy princess with golden tresses whisper to him that henceforth a physician's minimum fee would be twenty-five dollars; that every prescription would cost not less than five dollars; and that nursing care could be had for not less than five dollars an hour. Having the health of the public at heart, the health science fraternity believes in preventing and treating diseases by a logical, scientifically-based procedure that permits of no guess work. This procedure must be made available to all classes of people at a cost that is commensurate in some degree with their incomes but, at the same time, it must assure an ample return to the practitioners for their heavy educational investment and their special capabilities. Money is not necessarily the root of all evil but the lack of it is frequently the reason why so many persons pursue the wrong course in dealing with their ills.

Second, the U.S.P. and N.F. preparations available to physicians are the products of the best pharmaceutical minds in this country. They have been formulated upon scientific facts and not upon theory. In fact, they have been proven to be of such indisputable value that many of the basic formulæ have been plagiarized, dressed up in a new color and flavor, christened with connotative names, and sold in beautiful cartons at high prices. For the past several years our own Interprofessional Relationships Committee has made available to physicians, dentists, and pharmacists, cards upon which are shown the comparative costs to the patient of U.S.P. and N.F. products on the one hand and similar "patent" or "protected" articles on the other. When U.S.P. and N.F. products are prescribed, it is

possible for pharmacists to charge from 15 to 35 per cent less for these prescriptions and at the same time receive a fair return for their professional service. If patented or protected products are prescribed, physicians do not take advantage of the pharmacists' skill; the cost of the prescriptions to the patients is higher, and the pharmacists receive less in net return for their work. Shall we digress for a few moments to inquire whether such a saving to the patient would have any significant effect upon the cost of medical care? Let us assume that approximately 165,000,000 prescriptions are dispensed by pharmacists in the United States in one year at an average cost to the patients of about 85 cents. Of the \$140,000,000 expended by the public for prescriptions, about 52 per cent is for liquid medicines. If we arbitrarily assume that a physician could prescribe U.S.P. and N.F. preparations in 20 per cent of these cases and that the financial saving to the patients on liquid preparations alone would be approximately 35 per cent—the cost of medical care would be reduced by approximately \$5,000,000. Furthermore, 34 per cent of all medicaments prescribed are solids and are dispensed in capsule, tablet, or powder form. If 20 per cent of these prescriptions called for U.S.P. or N.F. products, the estimated saving (22 per cent) to the patients would amount to an additional \$3,000,000. Taken together, it would accrue in a saving of about 6 per cent net on all prescriptions—a nice, and in these days nearly unheard-of, return on any investment. This calculation does not include the \$50,000,000 worth of prescriptions dispensed by physicians, hospitals, and clinics. In my own opinion, the physicians throughout the country should realize the importance of prescribing U.S.P. and N.F. preparations whenever consistent to do so, if for no other reason than to effect this financial saving to the patient. If they would adopt this policy, it would seem logical to assume that it would also have some inhibitive effect upon the sale of approximately \$360,000,000 worth of "patents" sold every year in the United States.

Third, the U.S.P. and N.F. offer a great variety of adjuvants and vehicles for the physicians' use. The advent of the new National Formulary iso-alcoholic elixirs, together with other flavoring syrups and elixirs, offers great possibilities to

the physician to prescribe "different looking and tasting" medicines. Patients do not infrequently pass judgment on a physician's skill by the color, taste, and general appearance of the medicines which are dispensed upon his prescriptions. The contents of the prescriptions may be entirely different in each case. Furthermore, the prescription may be well formulated and designed to assist in remedying a specific pathological condition but the patient remembers only that the medicine that was ordered for him had a red color, that it tasted about the same as previous medicines, and that it was contained in a bottle about the same size as other medicines he had received upon previous prescriptions from this same doctor. Inquiry shows that physicians who are so unjustly criticized by laymen for this reason, are in many cases not aware that the U.S.P. and N.F. offer them the opportunity to avoid this criticism. The pharmacist, who is qualified, is glad to assist him so as to give the medicines he prescribes greater variety as to taste, color, and general appearance. The procedure is not intended to "fool" the public but rather to inspire greater confidence in the physician—a psychological condition that has been recognized as one of the most cogent factors in the treatment of diseases.

If the time would permit, other sound reasons could be given why physicians should prescribe U.S.P. and N.F. preparations whenever it is consistent with good medical practice to do so. I cannot commend too highly the work of our own and other Interprofessional Relationships Committees for their efforts in bringing these matters to the attention of physicians and pharmacists. A larger number of physicians than we would suspect, have responded enthusiastically and I am convinced that by their so doing, a marked improvement in the forms and types of medication dispensed by pharmacists is noticeable.

A sound ethical policy on interprofessional relations can become effective in improving the health service to patients only on one condition, namely, that the practitioners in the respective fields of the health sciences function within their own professional limits except in the case of emergency. No clear thinking individual can condone the dispensing physician any more than he can the prescribing pharmacist. Both are

definitely and distinctly outside of their respective fields and are not qualified either by training or experience to function efficiently in an acquired sideline. The fact that physicians dispense about \$25,000,000 worth of prescriptions a year whereas the pharmacists sell approximately \$160,000,000 worth of home remedies (such as castor oil, milk of magnesia, Stoke's expectorant et cetera) and participate in the sale of about \$360,000,000 worth of "patent" medicines, is no basis upon which to estimate the extent to which physicians and pharmacists engage in these deplorable practices. Regardless of the extent to which they are practiced by members of each group, they should be discouraged in no uncertain terms in any policy that is designed for the purpose of being directional in ethical relationships between physicians and pharmacists. If the services of a good pharmacist are not available, the physician obviously has no other choice than to dispense his own medicines. But this is not very often the case in our own state because there are about eleven hundred pharmacies each one serving a population of approximately twenty-three hundred. The geographical distribution of these pharmacies is also quite satisfactory. In some instances, physicians have been induced to dispense their own medicines because they have been advised that it would result in appreciably increasing their incomes. Now, gentlemen, the physician is or at least has the reputation of being a very poor business man. When gross profits are balanced against inevitable losses of professional prestige and the restrictions imposed upon him by his limited stock of remedial agents, I state without fear of contradiction that at the end of the year he will find himself not only with a net financial loss but also with a loss of professional dignity and efficiency. The altering of any indicated type of medication so as to make it conform to a limited stock of medicines, especially when nearly every kind is available in a pharmacy, is a distinct violation of the Medical Code of Ethics. Pharmacists prescribe (and I am sorry to say entirely too frequently) for the half-sick and inquiring layman. They too cannot be excused on any grounds whatsoever because they are in no way qualified to do so. If they are motivated by the hope of personal gain, I still maintain that aside from it being unethical, it is decidedly

por business. What will a pharmacist profit if he does succeed in selling a 35-cent bottle of kidney pills—let us say—when if he had been courteously frank about the limitations of his professional qualifications to prescribe, if he had pointed out the futility and danger of procrastination, and if he had recommended that his client consult a physician, ultimately he would have been rewarded with the privilege of contributing to the return-to-health of the patient by filling a physician's prescription. Also, in a very large per cent of these cases, the pharmacist would have been further rewarded by profound gratitude on the part of the patient. If a definite policy relating to dispensing physicians and prescribing pharmacists be incorporated in a professional code of ethics, much good will come of it. In the eighteenth century, an outstanding physician and pharmacist by the name of John Morgan, said:

"The Wisdom of the ages approved by experience, the most certain test of knowledge, has taught us the necessity and utility of appointing different persons for these different employments (medicine and pharmacy), and accordingly we find them prosecuted in every wise and polished country."

So far I have attempted to show that pharmacists are qualified to contribute their share toward a more perfect health service to the sick. In addition, I have discussed some of the bright and some of the dark sides of professional relations as they exist today. It has often been said that a profession is no stronger than its educational requirements, and this, in general, has proven to be true. However, the history of pharmaceutical education in the United States is the history of any other one of the health sciences; medicine, dentistry, or nursing. In each instance, the profession was long practiced upon a much higher plane than its education requirements indicated. With your indulgence, I would like to outline very briefly the progress of pharmaceutical education since 1900, and then tell you what the colleges and schools of pharmacy in the United States, and especially the one at our own University, are doing to prepare students and assist practitioners to give a finer quality of professional service to the physicians and the public.

I shall not go back further than 1900, which year marked the first concerted effort to promote

pharmaceutical education. In that year, there were in the United States, forty-four schools of pharmacy all with independent curricula, with courses ranging in length from six months to two years and with the students receiving upon graduation, a certificate or degree chosen by its individual institution. Realizing the desperate need for coördination in admission requirements, teaching and laboratory methods, length of course necessary for graduation with a certain title or degree, on May 8, 1900, delegates from schools, colleges, and departments representing twenty-one institutions, met in Richmond, Va., to form the American Conference of Pharmaceutical Faculties. Of these twenty-one schools, charter members of the Conference, only four were connected with state universities: Wisconsin, Ohio State, Michigan, and Kansas. At this first meeting of the Conference, the College of Pharmacy of the University of Minnesota was not represented for the very excellent reason that no invitation had been tendered that faculty. At the second session in 1901, Minnesota's petition for membership was presented, was reported favorably, and election followed.

I wish I might tell you that with the organization of the American Conference of Pharmaceutical Faculties, pharmaceutical education came into its own. Unfortunately, nothing of this kind happened. It was a long and sometimes a very discouraging experience, but I can say that from that time the trend was always upward.

I won't worry you with details but will mention only the outstanding results. This small group of forward-looking educators were able to coördinate and stabilize education standards, and they could influence the teaching methods of members schools, but they soon realized that there must be some force stronger than an intellectual one to regulate pharmaceutical instruction and practice. They turned to two already well established and influential organizations. They approached the state pharmaceutical associations for aid in awakening a feeling of pride in the profession and in creating a desire to support the efforts of the educational group; and the state boards of pharmacy for the actual fixing of scholastic requirements. With the aid of these two powerful groups, and especially the National Association of Boards of Pharmacy, in

most states they have been able to effect legislation governing pharmaceutical education that, in 1900, even the most optimistic member of the Conference would have considered impossible.

The first educational victory was the requirement that all entrants must be high school graduates. Then the length of the course was regulated: first, three years; then four years; until, since 1932, thanks largely to the activities of the National Association of Boards of Pharmacy, in practically every state in the Union, an applicant for registration as a practicing pharmacist must be a high school graduate, must have at least one year of practical experience, and must be a graduate of a four-year professional course in an accredited school or college of pharmacy. The time is not far distant when the minimum educational requirement will be five years of professional study. Furthermore, it is generally conceded it will be but a few years until the colleges of pharmacy in the United States will be definitely classified and rated not only by the American Association of Colleges of Pharmacy but also by the National Council on Education.

Those who are engaged in professional educational work have always been very anxious and willing to be of service to practitioners in their particular fields. From time to time, graduates from the College of Pharmacy of the University of Minnesota have returned to the Institution seeking either to refresh their memories or to acquire additional information. These cases, however, were rare. It was not until some of the ideas of President L. D. Coffman with respect to continuation study came to fruition this year in the erection of the Center for Continuation Study, that it was made possible for the University to systematically offer "refresher" and continuation courses of study to people in this state. On February 15, 16, and 17, 1937, the University of Minnesota offered this opportunity to licensed practitioners of pharmacy to return to the University and pursue an intensive course of professional study. Because this Continuation Study program is an innovation in education, there was no way of predicting how many registered pharmacists would avail themselves of this opportunity. No precedent had been established from which to determine if there existed a great enough interest in acquiring up-to-

date information on professional subjects to take men away from their establishments for four or five days.

The registration in this Pharmaceutical Institute was limited to fifty licensed practitioners. I am proud to state that not only was this quota filled within a comparatively few weeks after the announcement of the course of study, but also that applications for registration were returned. Because of the fine spirit of cooperation between the instructional staffs of the Medical School and the College of Pharmacy, the program of the Institute functioned very successfully. The registered pharmacists in attendance were not only interested in the newer methods for making emulsions, in the changes that have been made from the old Pharmacopœia and the National Formulary to the new, in incompatibilities in prescriptions, and in other strictly professional pharmaceutical subjects, but also were eager to learn from physician members of the Institute's faculty about allergic reactions, the newer developments in endocrinology, bacteriology, et cetera. I wish time permitted me to give you the details of this program and to tell you with what enthusiasm this information was received by the pharmacists in attendance.

So insistent are the demands for similar courses of study that plans are being formulated for giving at least one or two of these Institute courses every year. If expressions of appreciation can be taken as criterion for the success of the undertaking, then the faculty of this Institute has every reason to believe that those who were in attendance went back to the practice of the profession better qualified to render a more efficient service to those whom they wish to serve. This is just one way in which the College of Pharmacy of the University of Minnesota is trying to stimulate greater professional interest among the practitioners in the state.

Progress in any experimental science depends upon its accomplishments in research. The amount and character of pharmaceutical research is not generally known and appreciated. It has become so voluminous and so important that the Council on Pharmaceutical Research was established several years ago for the purpose of coordinating, indexing, and publishing the results of such endeavor. The Council has just issued

second volume, a work very creditable to armacy.

At the present time, there are eleven Graduate school students taking the major course work in the College of Pharmacy. Six of them will soon be candidates for the Ph.D. degree. Considering at the entire enrollment in the College of Pharmacy is only about one hundred fifty, this is a satisfactory number of graduate students. In order to acquaint you with their scope, I would like to mention some of the researches now in progress:

The development of standards under the Foods and Drug Act for medicinal products, chiefly those of the U. S. P. and N. F. In this connection we are working on the assay of cinchophen and neo-cinchophen tablets and the use of the volatile solvent method for determination of water in medicated syrups.

New methods for manufacturing and stabilizing galenicals, i.e., Syrup of Cherry (*Syrupus Cerasi*), Syrup of Raspberry (*Syrupus Rubi Idæi*), Syrup of Thyme (*Syrupus Thymi*), Syrup of Ferrous Iodide, and Solutions of Calcium Gluconate, et cetera.

Medicinal Plant Investigations:

Pharmacognostic:

- (a) The Pharmacognostic and Chemical Study of *Chrysanthemum Balsamita*, var. *tanacetoides*;
- (b) The Cultivation of Mints in Acid Peat Soils in Minnesota.

Phytochemical:

- (a) The isolation of a very active principle from *Phytolacca*. It depresses and paralyzes the central nervous system.
- (b) Discovery of a narcotic principle in sleepy grass (*Stipa Vesayi*) found in Southwestern United States.
- (c) Investigation of the claim that *Passiflora incarnata* is a uterine stimulant.
- (d) A study of the resins of *Impatiens biflora* (reputed to be of value in treatment of Poison Ivy poisoning).

Synthetic Products:

- (a) The synthesis of a new aconitine derivative, in which it is hoped to eliminate undesirable actions of aconite.
- (b) Synthesis of derivatives of Papaverine.
- (c) Alkyl sulfonic monocarboxylic esters as hypnotics.
- (d) Solubility studies on the salts of methioninic acid.

Physico-chemical Studies: Determination of pH

in pharmaceutical preparations of different alcoholic strengths.

6. Pharmacological:

- (a) Researches on a new aconitine block method for cat-assay of *Digitalis*.
- (b) The effects of methods of preparation and of storage upon the physiological activity of the glucosides of *Digitalis*.

7. Text Books: In addition to those already published, two new texts are about ready for the press:

- (a) *Dispensing Pharmacy*; (b) *The Chemistry of Plant Constituents*.

From the diversity of these projects, you can readily see that they are of pharmaceutical, pharmacological, medical, and chemical interest.

From year to year, we are concentrating more and more upon our research activities because it is through them we know pharmacy can contribute appreciably to the sum total of medical knowledge.

In conclusion: It is my belief that the results of all of these activities can contribute materially to the establishment of mutually profitable interprofessional relations among the practitioners in all fields of the health sciences. At present there exists nothing more than a tacit understanding in so far as an interprofessional Code of Ethics is concerned. Why should not these ethical conceptions be formulated into a clean-cut, well-expressed policy? Then, for steadfastness in its observance, we could subscribe to and join in the prayer of Maimónides, that eminent philosopher and physician of the Twelfth Century, when he said:

"The Eternal Providence has appointed me to watch over the life and health of Thy creatures. May the love for my Art actuate me at all times; may neither avarice nor miserliness nor thirst for glory or for a great reputation make me forgetful of my lofty aim of doing good to Thy children."

If we are motivated in our daily practices by such noble sentiments, we should be happy to support a policy in which all of our ideals are so expressed and epitomized that all persons, laymen, and practitioners alike, would understand and appreciate that "Closer interprofessional relationships contribute much to a better health service to the Public."

A COMPARATIVE STATISTICAL TEN-YEAR REVIEW OF THE CESAREAN SECTIONS PERFORMED AT ANCKER HOSPITAL*

ALBERT G. SCHULZE, M.D.

Saint Paul, Minnesota

THE operation of cesarean section is not difficult. The difficulty of the operation lies in the answer to the three questions: "Why should the operation be done?"; "When should it be done?"; and, "How should it be done?" These questions can tax the judgment and experience of the most able obstetrician.

The classical section is giving way very definitely and very rapidly to the low section, known also as laparotrachelotomy, popularized by De Lee. The low section has made it possible to save many actually or potentially infected uteri, which is a point much in its favor.

The classical cesarean section is perhaps the easiest to perform as far as mere technic is concerned. The low section is somewhat more difficult but is followed by much less postoperative disturbance. The extra-peritoneal section is rather infrequent and De Lee questions whether the connective tissue of the parametrial region is as resistant to infection as the pelvic peritoneum.

"Once a cesarean section, always a cesarean section" is no longer true. It was true perhaps in the days when the only reason for sectioning a pregnant woman was a contracted pelvis. What is true, however, is the fact that once a cesarean section, then always in a succeeding pregnancy there is the danger of rupture of the old and perhaps poorly healed uterine scar; and the only way to avoid this calamity is to repeat the operation should uterine rupture be threatened or likely to occur.

The literature on cesarean section is truly very voluminous. Confining ourselves just to those articles which have appeared in the last five years, we find that many authors confine their discussions to a statistical analysis of large numbers of these operations performed in different hospitals of the country or over varying periods of time.

Statistics and percentages on all the important points pertaining to the operation of cesarean

section vary according to the size of the hospital, also whether the patients are ward or private patients, and whether the operations were performed by members of the obstetrical staff only or by any and all the surgeons who may be permitted to operate in those various hospitals. Our purpose in presenting this subject at this time is to ascertain how favorably or how unfavorably the statistics of a ten-year review of the cesarean sections performed at Ancker Hospital may compare with those of other institutions.

General Review

At the Boston Lying-In Hospital¹⁴ from the year 1894 to 1931 the use of the low section increased from 2 to 60 per cent and, realizing that every pregnant woman in labor is a potential case for sectioning, the vaginal examinations had been reduced from 44 to 20 per cent and the mortality from section had been reduced from 7 per cent to zero during this interval.

Lull⁶ made a review of the cesarean sections performed during 1931 in forty-seven different hospitals of the city of Philadelphia. Nine of these hospitals did not have a single cesarean section during the whole year, but one hospital had a percentage incidence of 16.6 while the remaining thirty-seven hospitals had an average percentage of 2.45.

This review from Philadelphia also showed that the maternal mortality rate of the low section was half that of the high or classical; also that most of the operators expressed the opinion that it is not good surgery to do more than the section itself unless it is absolutely necessary.

Stein and Leventhal¹⁵ report on a ten-year period from Michael Reese Hospital (1922-1932). In the first half of this ten-year period cesarean sections reached the incidence of 0.9 per cent but in the second half of this ten-year period, the low section raised the percentage incidence to 3.79 but the incidence of high forceps, craniotomy and version were reduced. This must not be interpreted to mean that the reasons for doing

*President's Address, Ramsey County Medical Society, Saint Paul, January 26, 1937.

REVIEW OF CESAREAN SECTIONS—SCHULZE

TABLE I. FREQUENCY OF CESAREAN SECTION OPERATIONS

Name		Years	Deliveries	Sections	Per Cent
State of Iowa	8	1930-'32	91,738	955	1.
Cleveland Reg. Area	11	1926-'30	45,650	1,047	2.3
Columbia Hospital	14	1920-'30	13,986	228	1.7
Marg. Hague Mat. Hospital	13		9,000	177	2.
Miami Valley Hospital	10	1926-'34	9,527	243	2.55
Michael Reese Hospital	5	1922-'32	15,136	381	2.5
University of Iowa	4	9½ years	5,446	67	1.2
St. Louis Maternity Hospital	3	1927-'35	13,577	218	1.53
University of Maryland	2	1920-'26			2.4
		1927-'33			3.2
University of California Hospital	1	1907-'35	10,923	356	3.26
Frauenklinik, Wien	16	1914-'25			.56
		1925-'35			.6
Ancker Hospital		1927-'36	12,246	38	.31

Highest in the United States outside of Ancker Hospital—3.25 per cent; lowest—1 per cent; average—2.15 per cent.

cesarean sections were increased but rather that the low section is applicable in cases where the classical operation would be contra-indicated and the accoucher forced to do the difficult operation of high forceps, version or craniotomy.

At the Margaret Hague Hospital, two-thirds of the cesarean sections are of the low cervical type.

Plass¹⁰ reporting for the whole state of Iowa for the years 1930, 1931 and 1932, found that the classical section was seven times as frequent as the low section. He and others call our attention to the advisability of an x-ray of the fetus in utero as fetal anomalies may be discovered such as hydrocephalus or anencephalus, which conditions call for different methods of delivery.

Frequency

From the reports of various hospitals which show both the total number of deliveries and the total number of cesarean sections we find the percentage incidence as shown in Table I.

At the Ancker Hospital from 1927 to 1936 inclusive, according to the annual reports of that institution there were 12,246 women delivered and 38 cesarean sections performed, showing an incidence of 0.31 per cent.

The indications for the operation at this hospital were divided into three groups. Group A included the cases of pelvic obstruction, such as contracted pelvis of various types and degrees and pelvic tumors, and there were eighteen in this group. Group B included all the bleeding cases that were sectioned, such as various types

of placenta previa and cases of premature separation of the placenta, and there were eleven cases in this group. Group C included the remaining cases that were sectioned for reasons such as toxemia, heart and lung disease, and there were seven cases in this group. The charts of two cases could not be located.

Of the thirty-six recorded cases, seven had been sectioned in a previous pregnancy and while this fact may have been an influencing and contributing factor in helping us to decide on a cesarean section, it was not the determining and only factor. All the cases of repeated section had a contracted pelvis or a condition which justified the operation. In none of the repeat cases is there any mention on the chart of any signs or symptoms which suggest a threatened rupture of the uterine scar.

Type of Operations

Of these thirty-six cesarean sections, one was of the extra-peritoneal type; three were of the low or cervical type, while the remaining thirty-two cases were of the high or classical type. Spinal anesthesia was used in three cases.

Hysterectomy and Tubal Resections

Eleven patients were sterilized. In two a hysterectomy was performed: one because of multiple fibroids; and the other, a gravida 8, because of potential infection due to long labor and cephalo-pelvic disproportion. This shows a 5.6 per cent for hysterectomy. The remaining nine cases (25 per cent) were sterilized by

TABLE II.

Name		Hyster- ectomy	Tubal Resection	Total
University of California Hospital	1	3	31	34
University of Maryland	2		7.7	7.7
St. Louis Maternity	3	27	15	42
University of Iowa	4	10.4		10.4
Massachusetts General Hospital	12		25	25
Royal Maty. Hospital, Edinburgh	15	5.8	28	33.8
Miami Valley Hospital	10		40	40
Ancker Hospital		5.6	25	31.6

means of tubal resection. Other institutions report their percentages of sterilizations as shown in Table II.

Location of the Placenta

It is of interest to note the location of the placenta in our cases of cesarean section. Of the seven cases sectioned for placenta previa, the placenta completely covered the cervix in four, and partially in three cases. In all the other cases, where the placenta was normally in the upper half of the uterus, the operation record shows that in ten of them or 29 per cent, the placenta was on the anterior wall of the uterus under the uterine incision.

Cesarean Section in Cases of Toxemia

Two patients in this series were operated upon for toxemia. One was a gravida 7, thirty-four years of age, whose last labor was induced because of high blood pressure. In her present pregnancy her blood pressure was over 250 mm. Hg systolic and she showed retinal hemorrhages. This was a case of non-convulsive toxemia, perhaps nephritic in type, which was rapidly growing worse.

The other case was one of eclampsia or convulsive toxemia. The patient was a gravida 8, thirty-eight years of age, who had had no prenatal care. She did not improve under conservative treatment but had more convulsions. A thirteen pound living baby was delivered by classical section but the mother died after about forty hours. Without section she no doubt would have died and her baby as well.

In reviewing the literature all the available authors caution against doing a cesarean section for eclampsia, that is, the convulsive type of toxemia, but, nevertheless, they all report cases which were operated upon for this identical reason.

Siegel and Savage,¹² reporting from the medical department of the University of Maryland state "pre-eclampsia which does not improve under conservative treatment is sectioned, but eclampsia is entirely eliminated as an indication for this operation and these cases are treated by conservative methods."

Skeel and Jordan¹³ state that cesarean section is not a popular treatment for eclampsia in Cleveland and its frequency is diminishing.

The maternal mortality for cesarean section in eclampsia is high. Plass¹⁰ reports 10 per cent Mundell⁸ 20 per cent; another author reports 35.7 per cent; Courtiss and Fisher³ report 37. per cent; and Smith¹⁴ reports 50 per cent of maternal deaths following cesarean section for eclampsia.

At the Michael Reese Hospital,¹⁵ cases of partial placenta previa and eclampsia are delivered vaginally as a matter of policy, but occasionally they are sectioned.

Lull⁶ states, "Women with eclampsia are no suitable risks for abdominal surgery."

Plass¹⁰ states, "The best obstetric opinion of the day opposes the use of abdominal delivery in the cases of eclampsia."

The Margaret Hague Hospital¹⁶ reports no cesarean sections for eclampsia in a series of 9,000 deliveries.

Maternal Mortality

Plass has estimated that 25,000 cesarean sections are performed annually in this country and that the maternal death rate is between 5 and 10 per cent. Sepsis and peritonitis are the most frequent causes of maternal deaths. The general maternal death rate in the total confinements at the Massachusetts General Hospital is 1.05 per cent.

The average maternal death rate reported by

twenty-nine different hospitals is 6.27 per cent; the lowest reported is 1.3 per cent and the highest is 16 per cent.

TABLE III. MATERNAL MORTALITY

	Per Cent
Class estimates	5 to 10
Average of 29 hospitals	6.27
Lowest 1.3%; Highest 16%	
Philadelphia, 22 hospitals—1931	10
Large hospitals	6.5
Small hospitals	9.4
Ancker hospital	5.5

During the year 1931, twenty-two hospitals in the city of Philadelphia showed a 10 per cent maternal mortality following cesarean section.⁶

No doubt the most potent factor influencing the maternal death rate is the type of operation performed. At the Massachusetts General Hospital the classical section gave a death rate of 8 per cent while the low section gave a rate of only 1.33 per cent. In the Cleveland Registration area from 1926 to 1930 the classical section gave a maternal death rate of 7.6 per cent while the low section yielded only 2.8 per cent.

TABLE IV. CLASSICAL SECTIONS VS CERVICAL SECTIONS

	Mortality Per Cent		Morbidity Per Cent	
	Classical	Cervical	Classical	Cervical
Lull	6.7	3.8		
Massachusetts General Hospital	8	1.3	93.3	34.8
Cleveland Reg. Area 1926-1930	7.6	2.8		
Survey of 12 hospitals	5.2	2.5		

The death rate in large hospitals is quoted at 6.5 per cent while that of smaller hospitals is 9.4 per cent. In a survey of twelve hospitals the classical section gave 5.2 per cent maternal mortality while the low section gave 2.5 per cent. The highest maternal death rate is in the hands of the general surgeon.

At the Ancker Hospital in this series of thirty-six cesarean sections there were five deaths in all. One mother died of heart disease four weeks after section; another mother died of pulmonary tuberculosis over three months after being sectioned. These were non-surgical and non-obstetrical deaths. A third mother died of eclampsia about forty hours after operation. This was a non-surgical death and it is very evident that she would have died had she not been operated on, and her baby as well.

This leaves two deaths, or 5.5 per cent, which were definitely due to operation. The first patient had a contracted pelvis. A vaginal examination under proper conditions had been made forty-eight hours before operation and the membranes were reported as rupturing nine hours before operation. She died on the fourth postoperative day of peritonitis due to gas bacillus infection. A low section instead of the classical might have given better results. In the second patient it is not clear from the record what type of cesarean section was done but she had been in labor thirty-six hours and died after four weeks. Perhaps a hysterectomy was indicated in this case.

Fetal Mortality

The average fetal mortality in cesarean section as recorded in the reports of nine hospitals is 8 per cent; the lowest is 2.45 per cent and the highest is 15 per cent.

The fetal mortality in abruptio placenta has been placed at 100 per cent.

In the series which we are reporting thirty-six babies must be accounted for. Three of these were pronounced dead in utero before sectioning the mother for abruptio placenta, again 100 per cent of fetal mortality in this condition. Some operations for abruptio placenta, however, result in a living baby.

One baby, born by section at seven months due to a progressive non-convulsive toxemia and weighing 2.7 pounds, died in two hours. Another baby, born at seven months due to a central placenta previa and weighing 3.5 pounds, died after one day. A third baby died after one month of bronchopneumonia. The remaining thirty babies either left the hospital with the mother at the time of her discharge or shortly after. This is a corrected fetal mortality of 6.25 per cent.

Maternal Morbidity

The factor of maternal morbidity following the operation of cesarean section is not so easy to evaluate as there are different standards adopted by the different authors and institutions as to what constitutes morbidity.

There are, however, two outstanding factors that contribute most definitely to morbidity; one is the type of operation that is performed, and the other is the management of the patient before operation.

At the Massachusetts General Hospital,³ of those women subjected to a classical operation 93.3 per cent had fever but of those who had a low or cervical type of operation only 34.8 per cent had fever.

"Every woman in labor should be regarded as a potential cesarean section case until proven otherwise."

At the Margaret Hague Hospital,¹⁶ it was shown that if the membranes had been ruptured less than twelve hours before sectioning the morbidity was 4.2 per cent; whereas if more than twelve hours had elapsed before the patient was sectioned the morbidity was 21.4 per cent. If the patient had been in labor less than twelve

thirty-one patients spent 475 postoperative days in the hospital, or an average of fifteen and one third days each (Table V). Any woman who has had a cesarean section under conditions such as might be encountered in any municipal hospital and who needs to spend only fifteen postoperative days in the hospital, certainly did not have much morbidity.

TABLE V. POSTOPERATIVE HOSPITALIZATION

Stay in Hospital	No. Patients
10 days	1
11 days	3
12 days	6
13 days	2
14 days	7
15 days	4
16 days	2
19 days	2
22 days	1
24 days	1
30 days	2
Average stay 15.3 days.	

If postoperative hospitalization for a period longer than the average of fifteen days can be regarded as constituting morbidity, then it is of interest to note that all the patients in our series of thirty-six who showed any morbidity, had the classical section performed. This does

TABLE VI. HOSPITALIZATION LONGER THAN THE AVERAGE PERIOD

Stay in Hospital	(Classical Section)	Temperature
16 days	Partial placenta previa	101 on 2nd day
16 days	Fibroids, pulmonary edema, toxemia	100 highest
19 days	Myomata and hysterectomy	101 on 3rd day
19 days	Placenta previa, vaginal examination and packing	101 first week
22 days	Abruptio placentae	101 on 2nd day
24 days	Contracted pelvis; hysterectomy; wound infection	102 on 4th day
30 days	Partial placenta previa; thrombo-phlebitis	102 on 2nd day
30 days	Third operation; reoperation for intestinal obstruction	103 on 4th day

hours before being sectioned the morbidity was 4.4 per cent and if longer than twelve hours it was 10.8 per cent. This has been designated their rule of "the twelve-hour safe period." If no or only one vaginal examination had been made before operation the morbidity was 10.6 per cent but if two or more vaginal examinations had been made the morbidity rate ran as high as 30.8 per cent.

In the series of cases which we are reporting we chose to calculate our morbidity on a different basis. Five maternal deaths represent our total or uncorrected mortality. The remaining

not mean that the classical section was not proper and indicated in each individual case, but it does mean that the classical section, even under most favorable conditions, contributes much to maternal mortality and morbidity.

During this ten-year period, and adding the twin births, there were 12,347 births in the hospital. The national fetal death rate has been placed at 3.2 per cent. At this rate our total fetal deaths would have been 395. We did have 275 stillbirths but we do not know how many neonatal deaths. In many of these stillbirths cesarean section was not entitled to consideration

so we feel that our conservative attitude in the use of cesarean section was not to the detriment of the babies.

Summary

1. The average incidence of cesarean section runs from 1 to about 3.25 per cent.
2. The maternal mortality is between 5 and 10 per cent.
3. The maternal morbidity is tremendously influenced by the type of operation performed and the pre-operative care of the patient.
4. More and more conservatism is being displayed in the use of surgical methods in delivering the toxemic patient.
5. The maternal mortality following section in eclampsia is very high—from 20 to 50 per cent.
6. The classical cesarean section is giving way very definitely and very rapidly to the low or cervical type, also called laparotrachelotomy.
7. The classical section is the easiest to perform but it contributes more to mortality and morbidity. The low or cervical type is not difficult to perform, contributes less to mortality and morbidity and offers an opportunity for obstetrical conservatism. The extraperitoneal type has nothing particularly in its favor.
8. The incidence of cesarean section at the Ancker Hospital and the maternal mortality and

morbidity and the fetal mortality compare very favorably with similar statistics from other hospitals.

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EPISCLERITIS AND ITS RELATION TO DISEASE OF THE FEMALE PELVIC ORGANS*

WILLIAM L. BENEDICT, M.D.

Rochester, Minnesota

INFLAMMATION of the sclera and episcleral tissues of the eye, known as "scleritis" and "episcleritis," occurs in a limited variety of forms; it affects one or both eyes of adult persons and is found more commonly in women. The disease may occur simultaneously in both eyes, it may be limited to one eye, or it may affect both eyes alternately at intervals of a few weeks to several years. Periods of active inflammation may last for a few days or several weeks, are prone to recur, and frequently are accom-

panied by severe pain that is persistent and difficult to relieve.

The final effects of repeated attacks of inflammation are found in clouded corneas, and in eyeballs that are disfigured by staphyloma of the entire ciliary zone of the eye or by discrete areas of bulging anywhere in the anterior half of the sclera through thin, slate-colored regions where deep inflammatory nodules have been situated. The histopathologic appearance of the various forms is that of localized inflammation with increased vascularization and cellular infiltration which does not suppurate nor break down into

*From the Section on Ophthalmology, The Mayo Clinic, Rochester, Minn. Thesis read before the Minnesota Academy of Medicine, Dec. 9, 1936.

areas of necrosis, but which nevertheless leads to marked thinning of the scleral coat. While scleritis belongs among the rarer affections of the eye, it is not uncommon to find eyes that have been blinded or permanently damaged by it. Adequate descriptions of the disease are to be found in modern textbooks, and most ophthalmologists are familiar with the clinical aspects and courses of the various clinical forms in which it is presented.

The etiology of episcleritis and scleritis is not so well known, though many factors that are thought to be connected with the appearance of the lesions in the eyes have been mentioned, among them tuberculosis, syphilis, leprosy, gout, focal infections and disturbances of menstruation. When several different causes may be ascribed to the appearance of inflammatory lesions that take on a variety of forms, it is probable that a certain form or type of the affection may be caused by one factor, whereas other forms are influenced by another or combination of factors, keeping a somewhat consistent clinical aspect or course in persons of a certain sex or age group.

Histopathologic studies have confirmed the diagnosis of tuberculosis in many eyes enucleated because of grave effects of severe chronic scleritis. Some oculists have stated that nearly all cases of episcleritis and all cases of nodular scleritis are due to tuberculosis, but neither pathologic examination nor clinical experience affords adequate confirmation of this assumption. It has long been known that episcleritis is associated with uterine disorders and is prone to occur in adult females who are subject to disturbed menstruation. A satisfactory explanation of this association, however, has not been offered.

The observation of this association over many years appears not to have been seriously attended, if one may draw such a conclusion from the absence of any mention in textbooks on the therapy of episcleritis of attempts to cure the disease by correcting the uterine disorders. In this instance one may note the influence of continental teaching on the subject of ocular inflammations, so many of which are attributed to tuberculosis. The histopathologic appearance of the lesions of chronic scleritis is undoubtedly indicative of tuberculosis in many cases in which clinical evidence of systemic or localized tuber-

culosis is lacking; but, other diseases of the eye now believed on clinical grounds to be due to focal infection, or, as in the case of sympathetic ophthalmia, to some unknown cause, also have pathologic characteristics suggestive of tuberculosis and are placed by some pathologists in that category. There is ample evidence, however, in the clinical course of the disease and in the results of treatment of scleritis, to prove that in many cases tuberculosis is not an important factor.

A review of a series of cases of scleritis in women in which no clinical evidence of constitutional disease such as tuberculosis, syphilis or gout was found, directed attention to the relationship between exacerbations of the disease and the menstrual cycle. A specific sex peculiarity could be eliminated from consideration at once, as episcleritis occurs in both sexes, although it occurs much more frequently, approximately 25:1, in women. Our observations at the clinic have confirmed the statements of other writers on the subject that scleritis is not found in children but in adult men and women. The character of the lesions, however, varies somewhat with age and they may be classified into types which are not always clearly defined and which may merge one into the other. It is indeed probable that these types are merely stages in the progressive development of the same disorder, and are influenced by the state of health of the patient, the etiologic factor, or possibly by the nature of the dominant etiologic agent. Discussion will be confined in this paper to the two main types, episcleritis and scleritis.

Episcleritis

Episcleritis was defined by Juler as "an inflamed condition of the episcleral tissue, which may exist with or without scleritis. It consists of a dusky-red nodular swelling beneath the ocular conjunctiva. It usually occurs in single patches, measuring from 4 mm. to 6 mm. in diameter, but two or more lumps may appear in the same eye. It is slow in progress, often lasting many months."

The practical importance of distinguishing between a superficial and a deep form of the disease was emphasized by Fuchs, who, however, referred to *episcleritis* as a superficial form of *scleritis* which "makes its appearance as a focal inflammation, a circumscribed inflammatory nod-

ule forming in the sclera." The importance of a clinical distinction between the superficial and deep forms of scleritis is evident from the writings of other authors, Fox, de Schweinitz, Roemer, and Weeks.

The incidence of the disease is mentioned by Fox who stated: "Occurring as a primary affection, episcleritis may in most cases be traced to some constitutional affection, such as gout, rheumatism and syphilis. The condition seldom attacks children, being restricted almost entirely to adults. It is somewhat rare in this country. In the Medical Chi. Hospital service the proportion is about 1:3000, while at Moorefield's Eye Hospital in London the proportion is about 1:700. The frequency with which it attacks women is rather interesting, as most of the patients are nursing mothers or the subject of some uterine affection." I have no other statistics to compare with those of Fox just quoted, but at The Mayo Clinic the proportion would seem to be much less, about 1:2500. Furthermore, I have personal knowledge of only one nursing mother who suffered from episcleritis. Women subject to this affection are free from exacerbations during pregnancy and lactation with but few exceptions.

Roemer stated that, "The distinction (between superficial scleritis, and a deeper form, the true scleritis) is of clinical importance, although no sharp differentiation can be made between them pathologically, because experience has taught us that the prognosis of the superficial form is good, in that no serious injury to the interior of the eye is associated with it, while it is otherwise with the deep scleritis, which involves other portions of the eye." De Schweinitz described the superficial type of scleritis as "dusky-red subconjunctival swellings or nodes, which usually appear in the ciliary region on the temporal side of the cornea, though patches may occur in any portion of the zone. The elevation is sometimes tender to pressure and sometimes not, and there may or may not be much irritation and pain. In some cases of phlyctenular disease of the corneal margin, it is difficult to decide between the affection and episcleritis; what appears to be a patch of the latter may develop into the former." It should be noted that the differentiation of clinical types is not supported by differences in etiology, pathology or chronicity. The principal

distinction lies in the complications which occur only with the deeper form.

The disease is often seen in a mild form as attacks of congestion of an episcleral area coincident with the menstrual period; these attacks last for one to three days, gradually fade out without leaving trace, only to recur with the next period. In some women redness of the eye occurs at the time a menstrual period is due even though there is no menstrual flow, whereas in other cases irregular periods may be accompanied by a more or less constant state of epibulbar congestion with periodic exacerbations. A form of evanescent episcleral injection frequently seen in young women of nervous temperament, lasting from two to eight days and reappearing again at intervals of several weeks or months to go through the same course, was called "fugacious periodic episcleritis" by Fuchs, and by Jonathan Hutchinson was described as "hot eye." De Schweinitz listed as causes of episcleritis rheumatism, gout, tuberculosis, menstrual derangements, enterogenous auto-intoxication and focal infections. More important, however, from the standpoint of danger to the eye is the deep form of the disease known as scleritis or scleritis. In such cases the complications that follow often lead to blindness through opacification of the cornea (sclerosing keratitis), or cloudiness of the vitreous from choroiditis, and secondary cataract or occlusion and reclusion of the pupil, leading to secondary glaucoma from iritis.

Scleritis

In the deep form of the disease the lesions consist of diffuse bluish-red areas of injection situated in the anterior portion of the eyeball, usually some distance from the cornea. These may be single or multiple nodules and they may coalesce and occupy the entire visible portion of the sclera; they may be very painful to the touch but there is only moderate photophobia and lacrimation. In many cases of diffuse deep scleritis, whitish nodules develop in the inflamed tissue (nodular scleritis). Deep scleritis more often affects both eyes, and as treatment is unable to arrest it, it is prolonged over a course of years. There are remissions lasting months or years, the eyes becoming affected alternately for months at a time; or the eyes may be free from attacks during the greater part of the child-bearing pe-

riod of life, only for the condition to become active again after the menopause. This is more likely to be true of those women who bear several children. The recurrent attack of congestion usually appears at a different place on the sclera, until the cornea has been entirely surrounded by slate-colored spots of thin sclera and the ciliary zone of the scleral coat is practically absorbed.

Just as it is difficult to classify all cases as either episcleritis or scleritis from clinical appearances, so is the pathologic distinction also obscured by the similarity of the tissue in eyes that come to microscopic examination. The typical features of episcleritis are often present in addition to the deep scleritis. In many cases the inflammation is equally marked in the sclera and in the uveal tract. In these the superficial features do not appear to be different from the simple form. The lesions in the uvea may be caused by transmission along the vessels and lymph channels, but Parsons thought them to be evidence of independent foci of inflammation.

In the more severe cases deep scleritis takes various forms. One group has been designated as "annular scleritis," a name given by Parsons to a group described by German authors as "brawny infiltration of the sclerotic." It is a disease of advanced age, usually affecting women more than sixty-eight years of age. Usually both eyes are affected, though not to the same extent. The affected nodules in the sclera do not break down into abscesses. In some cases localized thickening occurs (nodules); in others, extreme thinning of the sclera allows bulging, which results from inability of the tissue to withstand intra-ocular pressure.

With widespread destruction of the anterior sclera and sclerosis of the cornea, glaucoma is a common sequel for which the eye may have to be removed. In many eyes removed for the late effects of chronic scleritis, no areas of caseation necrosis or tubercle bacilli are found, although often small mononuclear leukocytes are present. Foreign-body giant cells may also be present, such as are seen in granulomatous tissue, but nothing characteristic of tuberculosis. All writers, however, who refer to the etiology repeatedly mention tuberculosis, syphilis, gout and rheumatism. De Schweinitz gave the first comprehensive clinical and pathologic consideration of the etiology of the disease in this statement:

"Scleritis may be a metastatic inflammation, the original focus of infection being at some distant part of the body, for example, a rectal abscess, a felon, or a purulent sinusitis (Dupuy-Dutemps), and arise because of the more usual focal infections in the teeth, tonsils, and intestinal tract. Disturbances of the internal secretions are doubtless of etiologic influence in many cases."

The relationship between disturbances of menstruation or disorders of the uterus and periodic attacks of episcleritis is mentioned in several textbooks on ophthalmology,^{2, 3, 5, 6} but in the recommendations for treatment, none of the authors has suggested that correction of the uterine disorder may influence the course of the eye disease. It is commonly believed that inflammation in the eye is difficult to cure, that the symptoms are difficult to ameliorate by local treatment, that such inflammation is prone to recur even at intervals of years, and that the condition is, in a manner of speaking, self-limited. All concede that it is a chronic disease resulting from infection, either local or systemic. No proof has been advanced that it is due to allergy or to abnormal internal secretions.

Infections in the pelvic organs of both men and women as sources of metastatic inflammation in the eye were studied by the author with von Lackum and Nickel, and our conclusions were reported in 1926. With the establishment of the clinical evidence of the relationship between the cervix uteri and the eye, bacteriologic examinations of the cervix were made in a few cases, and local treatment to the cervix, together with vaccines, was instituted with good results. The etiologic factor was found to be a green-producing streptococcus which was highly virulent, as shown when cultures were injected into rabbits. The streptococcus was found in the cervical canal, in some cases without cervical erosion or other visible evidence of uterine disorder. In other cases an infection of low grade was found in the ducts of the glands in the cervix and even in the walls of the uterus. The severity of the inflammation in the eye was independent of the apparent extent or severity of the disease of the uterus.

Ever since the importance of focal infection has been accepted in the etiology of disease, the value of treating all infected organs has been recognized. Investigation of the bacterial flora

about the teeth, tonsils, and pelvic organs of a patient who is suffering from some disease thought to be due to focal infection has shown that in all these organs in any one patient the same types of virulent organisms may be found. It is quite obvious that to cope effectively with such infections the affected organs must be treated. It is useless to remove infected teeth and tonsils and permit other infected areas to remain unmolested. The lack of proper and thorough treatment has done much to discredit the focal infection theory of disease. It may not be possible to deal with focal infection in the pelvic organs as radically as can be done with teeth and tonsils, yet a great deal can be done to diminish the infection and to reduce the severity of metastatic disease. Our studies at the clinic indicate that bacteriologic examinations, particularly of the pelvic organs, were helpful in checking the results of treatment.

Local treatment of the cervix and the use of vaccines did not give satisfactory results in cases of extensive uterine infection, either because the infected regions were not accessible or because they did not yield to such measures as were employed. In some cases the pelvic disease was so severe as to warrant amputation of the cervix or hysterectomy. It was noted that several women who had been subject to chronic episcleritis were entirely free from attacks after removal of the uterus. As other foci of infection had been eradicated, the conclusion that the disease of the eye was caused by the infection in the uterus was justified on clinical grounds. Further investigation confirmed this presumption. Removal of infected uterine tissue is often necessary to eradicate focal infection and is indicated in cases of protracted, severe types of episcleritis when the history of the eye disease and disease of the uterus establishes a definite relationship.

A group of cases carefully studied over a period of ten years at The Mayo Clinic has shown conclusively that the relationship between periodic episcleritis and disturbances of menstruation and disorders of the uterus is in many cases due to focal infection of the pelvic organs, and that a strain of green-producing streptococcus is the bacterial organism which usually causes the infection. The results of surgical measures to eradicate the infection have justified the means employed. Cauterization of eroded areas on the cervix may be sufficient in cases of local

cervical involvement. In more extended infections, amputation may suffice. Hysterectomy has been employed only in cases of extensive pelvic disease after less radical measures had proved to be ineffective. A few of the patients of this group were threatened with total blindness from scleritis and sclerosing keratitis and complications that occur through involvement of the uvea. In every case there was immediate relief of the episcleritis following amputation of the cervix or hysterectomy. In a few cases there have occurred mild recurrences of episcleritis which have yielded satisfactorily to local measures and use of autogenous vaccines. There have been no cases of intractable recurrence in which postoperative treatment has been adequate.

Undoubtedly there are cases in which episcleritis is not due to focal infection but to some other cause, such as tuberculosis, gout, syphilis or disease of the nasal accessory sinuses. The relationship between the disease of the eye and disturbances of menstruation in such cases is not established. Obviously, improvement of the eye following pelvic surgery in such cases would be only temporary, if it occurred at all, and could be explained on another basis than that of removal of foci of infection.

Our experience at the clinic has shown that relationship between episcleritis and uterine disorders is often difficult to establish. Until a patient has had it brought to her attention that there may be a relationship, it may not be possible to obtain a satisfactory history. Often there are no symptoms of uterine disorder, and irregular menstruation only confuses the issue. Careful gynecologic examinations combined with bacteriologic investigations must be repeated until the relationship with the eye disease can be established or shown not to exist. If it can be established, the indications for remedial measures are clear.

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PILONIDAL SINUS*

WILLIAM G. STROBEL, M.D.

The Duluth Clinic

Duluth, Minnesota

PILONIDAL sinuses are very frequently encountered in any surgical practice. At the present time there seems to be a marked confusion as to just what types of lesions should be considered in the discussion of this pathological entity, certainly not all the different types of congenital lesions that are found in the sacrococcygeal region, for here, owing to its very complex embryology, is perhaps the most common site in the body for pathological lesions of developmental origin. Only those lesions that are posterior to the coccyx and sacrum should be considered as pilonidal sinuses. It is true that some of these lesions may become very large and then by continuity may extend to the side and even anterior to the above structures. Lesions anterior to the sacrum, however, are of entirely different origin.

The term "pilonidal" comes from the Latin words, "pilus," meaning "hair," and "nidus," meaning "nest," in other words a "hair nest." Various other terms have been used since it was first described by Warren⁹ in 1867; "coccygeal, sacrococcygeal or sacral sinus, dimple or fistula"; "postanal dimple, fistula or fissure"; "posterior umbilicus"; "postsacral or sequestration dermoid." The term "pilonidal sinus" is usually used in American literature, somewhat erroneously, however, for true cystic condition is very rare nor are hairs always found.

There are very many theories in regard to its etiology. Warren¹⁰ believed that it was the result of hair growing inward and producing a dimple or hole. Hodges,⁴ who gave the name pilonidal sinus to the lesion, advanced the theory that the disease develops due to uncleanness, abrasions being formed and then hair growing inward. Mummery⁷ says that the sinuses are congenital in origin and are remnants of faulty coalescence of the cutaneous covering of the back during early embryonic life. Bevan¹ states that the sinus develops congenitally from a bud of epithelium which has been turned under the in-

tegument. Stone,⁸ in 1924, stated that the sinus developed from downward growth of epithelial cells and not from the neural canal. Later, in 1931, he brought out a theory that these sinuses are similar in nature to the preen glands found in birds. Weeder¹¹ says that because we find epithelial cells lining the walls of the tract or cyst cavity, they must be derived from the embryonic ectodermal layer. Masson,⁶ quoting Blanch Sutton, says that faulty coalescence of the cutaneous covering of the back is the cause of these cysts. Mallory⁵ states that these sinuses develop from remnants of the medullary canal. Gage² holds that pilonidal sinus results from the anomalous development of the medullary canal, and that the coccygeal dimple results from disturbance in development of the coccygeal ligament. Fox,³ in a very recent paper, draws the conclusion that these sinuses are derivatives of the skin ectoderm and not of the neurenteric canal, that they are formed from ectodermal invagination and probably represent a vestigial skin appendage, "preen gland."

The exact etiology of pilonidal sinus is not known, but if one keeps in mind the pathology usually found, the theory of ectodermal invagination is the most plausible explanation.

The disease very seldom becomes evident before the age of seventeen years. Most cases are seen between the ages of twenty and forty years. Rarely have cases been reported in infants. However, I saw one infant seven weeks of age with all the typical predominant pathological findings. It is very rare in the colored races. It is much more common in males than females, in a ratio of about ten to one. The latter may be explained in that males are much more exposed to trauma than females.

The initial symptoms usually follow trauma, often of quite a severe nature. A short time after the injury these patients complain of a swelling in the region of the coccyx and a discharge of foul, pussy material. Localized pain and swelling are very common, but patients very seldom are ill from the lesion. History of re-

*Read before the Northern Minnesota Medical Association, Fergus Falls, Minnesota, August 31-September 1, 1936.

eated swelling with pain and then rupture of the mass, is very often given. Also history of one or more surgical incisions of abscesses is often obtained. In many, one also gets the his-

round, skin lined opening differentiates the lesion from a boil or carbuncle. Teratomas, fetal adenomas, malignant lesions (primary or secondary) must be excluded by the history, physical

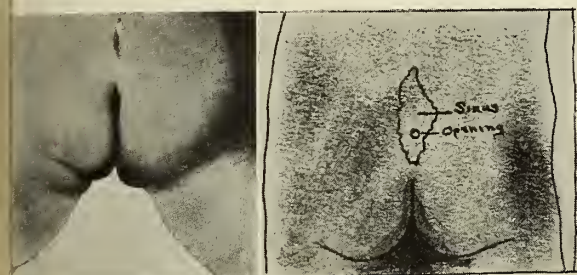


Fig. 1 (left). Photograph that has been touched up, showing the postnatal dimple and two oval openings.

Fig. 2 (right). Schematic drawing showing the opening, the approximate location of the sinus, and the main part of the anus above the opening.

ory of one or more attempts at removing the lesion by radical operation.

On examination one may find a swelling from which pus exudes. Occasionally the tumor only is present. In all cases in the midline at the juncture of the sacrum and coccyx, one or more skin lined, round or oval openings are found. This is absolutely pathognomonic and is a requisite in all cases except when radical operation has been performed. There may be lateral, superior or inferior openings which are not skin lined but are covered with granulation tissue. From the latter, hair may also project. Pus usually exudes from these openings. These openings are caused either by surgical intervention or by spontaneous rupture of an abscess. A probe passed into these openings will always go into the sinus cavity and if one uses patience, one can often bring the probe out of the normal opening.

The diagnosis is made by the location over the sacrococcygeal region; by midline oval or round, skin lined orifice or orifices; by the fact that a probe passed into a normal orifice always passes upward and not downward.

Pilonidal sinus should be differentiated from osteomyelitis, tuberculosis and syphilis. This may be done by the history and x-ray examination. Bone can usually be felt in the latter on passing a probe in a syphilitic lesion. Wassermann and Mantoux tests are corroborative. In fistula in ano the probe passes downward instead of upward. A history of repeated attacks and long duration and the finding of the definite

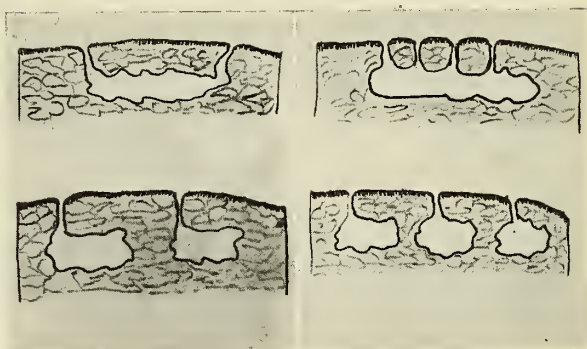


Fig. 3 (left). Schematic drawing showing a sinus with two openings—one above and one below, and two separate sinuses, each with a separate opening.

Fig. 4 (right). Schematic drawing showing a large sinus with four distinct openings. The lower drawing shows three sinuses, each with a separate opening.

examination and microscopic examination. Ordinary sebaceous cysts must be considered, but these are easily excluded.

The pathology of this lesion must be very carefully studied for on this depends the understanding of the surgical treatment. There are at the midline near the sacrococcygeal juncture one or more skin lined orifices which communicate with a sinus or sinuses below. I have seen the following in my own cases: one external midline oval orifice that communicated with a sinus which extended laterally, slightly downward, but to a greater extent upward associated with a raised granulated opening to the right and slightly above which also communicated with the sinus below; two midline, rounded orifices, communicating with one sinus cavity; three rounded openings with two sinus cavities, two opening into one sinus cavity and one into another; four rounded openings, two leading into one sinus cavity and two into another; three openings, each leading into a separate sinus cavity; five rounded openings, all leading into one large sinus cavity. All of the above had one or more abnormal openings which led down to the sinus cavities. These observations were all made on surgical specimens which had been injected with methylene blue previous to operation. Very often one finds orifices which seem to be blind and cannot be injected, but on careful cross section one can



Fig. 5 (left). Schematic drawing showing the modified Lahey technic. The central large opening shows the sinus having been removed and to the outer side is a secondary incision.

Fig. 6 (center). Schematic drawing showing the sinus closed and a gauze packing in the secondary wound.

Fig. 7 (right). Schematic drawing showing both wounds closed.

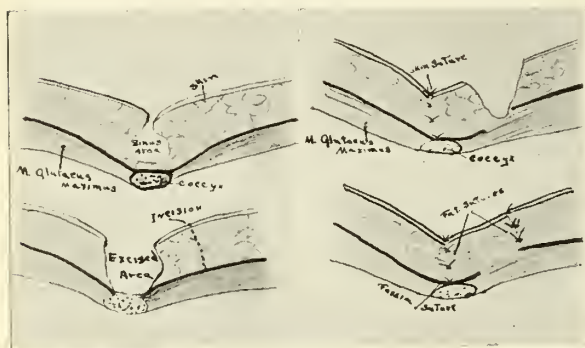


Fig. 8 (left). Schematic drawing showing the sinus area, the opening, fat, fascia, gluteus maximus and coccyx. The lower drawing shows the excised area and the incision at the outer side through the skin, fat, fascia down to the gluteus maximus.

Fig. 9 (right). Schematic drawing, the upper one showing where the fascia underneath the transplanted flap has been carried over the bottom of the sinus to the fascia of the excised wound and all other structures carried over the same way. It shows the gap made by carrying over this fascia. Note especially that the fascia over the gluteus maximus remains separated under the formed wound.

usually find a skin lined tract which leads into a small or large sinus.

The pathology is best illustrated by citing a case as described by our pathologist, Dr. George Berdez. "This specimen is a piece of tissue 11x3x2.5 cm. In the skin one can see near the lower end a smooth opening to one side and somewhat higher is another opening which has a granulating surface from which protrudes some hair. A probe can be passed into both openings and when the specimen is cut both probes are seen in the sinus cavity. The cavity contains some fluid, sebaceous material and some hair. The sac is very irregular in shape and lobulated.

Microscopically the sinus consists of granulation tissue and numerous blood vessels; the tissue is infiltrated with polymorphonuclear leukocytes, giant cells, blood pigment, plasma cells, lymphocytes and monocytes. The main sinus nearest to the skin opening is lined with stratified epithelial cells. There is marked extension of inflammatory reaction beyond the wall of the sinus."

The operation of choice in selected cases, believe, should be a modified Lahey operation. In order to minimize infection no operation should be performed in the acute stage of the disease. Abscesses should be drained and treated with hot packs until the inflammation subsides. This can be done while the patient is ambulatory and not confined to the hospital. The area of operation is prepared for two days before operation. This must be meticulously done to rid the skin as much as possible of all infection. The skin is washed two times daily with soap and water, followed by washing with benzine and then with ether. At the time of operation the skin is again prepared, first washing with benzine and ether and then painting with tincture of iodine, this latter being removed with Richardson's solution.

The bowels are well cleaned by giving large saline enemas followed by instillation of 4 ounces of mineral oil the evening before operation. Enemas are repeated in the morning until the water returns clear. The bowels are kept bound up until the seventh postoperative day.

The anesthesia of choice in these cases has

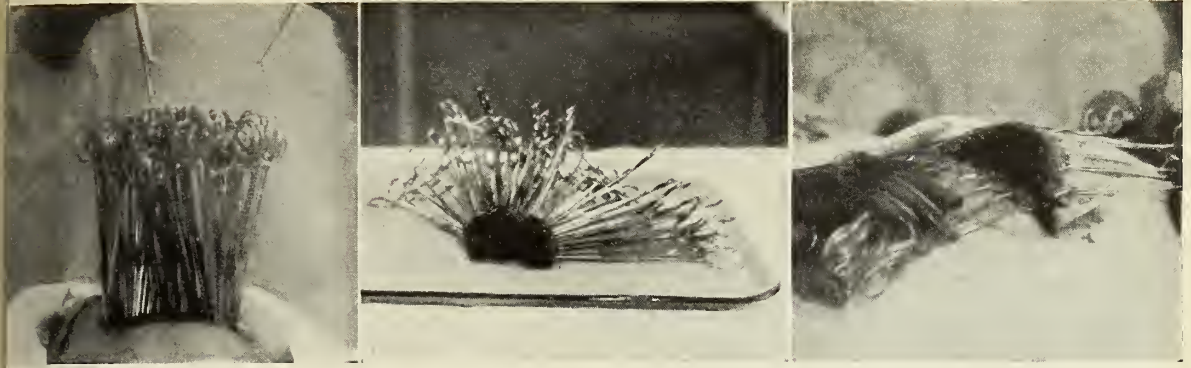


Fig. 10 (left). Photograph showing the technic of applying forceps to the cut edges of skin in order to close up the sinus incision absolutely air-tight.

Fig. 11 (center). Photograph of specimen en bloc, removed with the forceps still intact.

Fig. 12 (right). Photograph showing the wound made by removing the block of tissue.

een 50 mg. of novocaine dissolved in 2 c.c. of spinal fluid, injected well above the diseased area. Personally I feel that local block anesthesia should not be used for it can easily spread the infection. The only objection to the use of spinal anesthesia that has been advanced is that it has to be given near the infected area, but under proper precautions I am sure there is no danger. Caudal anesthesia, of course, is out of the question.

The patient is put in a prone position. All the openings are identified and by using a blunt cannula are injected under moderate pressure with a 1 per cent methylene blue solution. The extent of the cavity is estimated as nearly as is possible, and the lesion included by two curved incisions made through the skin and partly through the fat. Forceps are next placed so that the mesial edges of the incisions are brought together in the midline, thus closing the openings through which infected material may escape. These forceps are placed very close to each other in order to make as near an airtight space as possible. I feel this to be far superior to any attempt at suturing the openings. The incision is then carried down to the coccyx and sacrum on both sides, being very careful not to enter the sinus cavity. All the inflammatory tissue should be included in the block removed, an attempt always being made to keep at some distance from the inflammatory area. If, after removal of the tissue en bloc, one finds a blue stain in the fascia over the coccyx or sacrum, this fascia is removed and even at times the bone curetted. In one case I found that the diseased tissue extended

to the side and underneath the coccyx, so the coccyx and some tissue underneath it were removed with the same block of tissue. A second curved incision to the right or left is made at some distance from the original incision, the width of which depends on the cavity formed by the block excision. The incision is carried through the skin, fat and fascia down to the gluteus maximus muscle. The fascia under the flap is then completely freed from the muscle. All bleeding vessels are carefully sutured, for we must have an absolutely dry field. The inner edge of the freed fascia is sewed to the outer edge of the fascia on the opposite side. This is done by using interrupted plain catgut sutures. The skin is closed with interrupted dermal sutures. Dressings are applied and then a very tight covering is made with adhesive over the entire area, the purpose of which is to prevent any further bleeding and to close any space that may be left.

The patient is put to bed in the prone position and kept there for seven days. The bowels are not opened before the stitches are removed on the seventh day. The dressings are never changed unless there are signs of infection, such as rise of temperature or severe pain in the wound.

I am well aware of the fact that there are some surgeons who feel methylene blue is not specific for diseased tissue and I agree with that contention to some extent, but certainly feel that by its use we can frequently remove more of the diseased area. In some cases we found that the methylene blue had not entered all the

sinuses and in some it seemed to have extended beyond the area of diseased tissue as determined by microscopic examination.

In the last five years I have surgically removed thirty-four pilonidal sinuses, twenty-four of

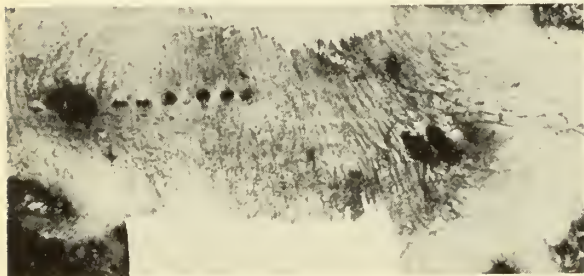


Fig. 13. Photograph of a recent specimen removed, showing seven oval openings and three extraneous openings.

which were treated according to the modified technic described, and ten by the open method with packing. There were no recurrences in the cases treated by the Lahey method and one recurrence in a case treated by the open method.

The series is too small for the drawing of any definite conclusions. These cases have all been traced, but in some the time interval is too short to state absolutely that there will be no recurrence. Primary union was obtained in most of the cases and these required no further treatment after leaving the hospital. Six patients had some drainage before they left the hospital, but after three to five weeks of careful office supervision four of the patients were healed and have remained so. One patient who drained for one year, has been closed for four months. One patient, operated February 29, 1936, is still under treatment. There was some drainage when the patient left the hospital and there still is a small sinus present. Four of the above cases had previous radical operation.

Conclusions

1. The various theories as to the etiology of pilonidal sinus are given with the conclusion that it is of embryological origin and develops from ectoderm invagination.
2. Symptoms with pathognomonic findings are given.
3. The pathology is described with emphasis on the fact that more than one sinus often exists.
4. In selected cases a radical removal of the lesion should be done, followed by a modified Lahey plastic operation.
5. Proper selected cases of pilonidal sinus can be cured with only a short period of hospitalization by the modified Lahey technic.
6. Spinal anesthesia is the anesthetic of choice.
7. Radical operation is contra-indicated in the presence of acute infection.
8. The modified Lahey type of operation is indicated only where the wound will remain clean because the wound must be closed without drainage.
9. When previous radical operation has been performed or where there is contamination, the open operation is the method of choice.

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DUODENO-JEJUNOSTOMY FOR DUODENAL STASIS*

GEORGE EARL, M.D.

Saint Paul, Minnesota

DUODENAL stasis may result from pressure on the terminal portion of the duodenum; from lowered muscular tone, fatigue, or emotional disturbance with evidences of asthenia, migraine, low glandular activity, and ptosis; from inflammatory adhesions, congenital malformations and new growths; or from the relationship of the duodenum with the liver and pancreas.

Surgically, the chief interest lies in the possibility of compression of the distal end of the transverse portion of the duodenum where we have posteriorly, the inferior vena cava, aorta, diaphragmatic crura and the third and fourth lumbar vertebræ forming a non-yielding mass over which the distal portion of the duodenum lies. Above, the superior pancreatico-duodenal artery presses on the duodenum as a rule and if marked, dilatation above this point will occur. Anteriorly, the root of the mesentery, especially if excessively short, the lower layer of the transverse mesocolon and the superior mesenteric vessels complete the ring through which the duodenum must pass. The upright position of man as contrasted with animals on all fours leads to ptosis. Dislodgement not only of the small bowel but of the right colon and the right kidney may increase compression factors.

Symptoms of compression vary with the degree of the failure of the duodenal contents to pass on normally. The age incidence is usually in the twenties when for most people the stress of life first becomes definite. Abdominal distress comes after eating; nausea may be quite marked. The pain centers above the navel and to the right. Cramps may be of a severe type which is relieved by vomiting. If food is not tolerated, weight loss and dehydration follow with resulting weakness. Psychoneurotic elements become marked. Anxiety, restlessness, and high emotional disturbance follows. Unstable patients are easily upset, whereas more stable types will tolerate a considerable degree of duodenal stasis.

Medical regime includes hospital bed rest, elevation of the foot of the bed, bland diet, sedatives, belladonna. Correction of deficiencies in diet will relieve some cases and temporarily improve others. Except where there is marked dilatation of the duodenum indicating long standing stasis of an obstructed type, thorough medical regime is always indicated. Dr. J. Allen Wilson saw these cases from the medical side. This report deals only with cases that did not respond to medical regime.

X-ray is the final diagnostic procedure showing failure to empty, antiperistalsis, a writhing action, and dilatation of the duodenum. At times the barium will pass in the recumbent position while it is held in the duodenum in the upright position. The clinical symptoms of duodenal stasis often are not sufficient, or at least not generally recognized, making x-ray a necessity in determining diagnosis and procedure. The film study is of value only when definite dilatation of the duodenum is present or when pressure on the duodenum by extrinsic masses or by the root of the mesentery can be demonstrated. In chronic cases the caliber of the duodenum is definitely increased. If there is some obstruction at the root of the mesentery, this enlargement may be considerable. Early evidence of duodenal ileus is not shown by the film study and must be seen by fluoroscopic examination to be recognized. Fluoroscopically there is seen a tendency for barium to remain more or less localized in the dependent portion of the duodenum, and if the condition is a particularly active one, there is seen a marked writhing of the duodenum with active rushes of the barium towards the duodeno-jejunal angle, but instead of passing into the jejunum, the barium is carried back very quickly by an antiperistaltic movement into the bulb and often into the stomach. This process is many times repeated until one movement is finally able to carry the barium into the jejunum.

Surgical procedure is indicated with definite findings not relieved by medical regime. A low mortality rate is found in all the series reported.

*Read at the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, May 5, 1936.

RÉSUMÉ OF CASES

Patient	Case 1	Case 2	Case 3	Case 4	Case 5	Predominant Findings
Age, Sex	Female, Twenty-three Years, Single	Male, Twenty-seven Years, Single	Female, Thirty Years Single	Female Twenty-seven Years, Single	Male, Thirty-four Years, Married	Young Female
Previous Operation	Appendectomy, cholecystectomy	Appendectomy	Appendectomy, adhesions	Appendectomy	Bilateral herniotomy	All had previous abdominal operation
History	Severe intermittent attacks of vomiting for 1½ years necessitating absence from work and hospital confinement three times. Epigastric pains. Worried over home affairs.	Abdominal distress after eating centering around navel. Business worries, continued to work. Markedly temperamental. Unable to adjust himself.	Repeated attacks abdominal pain, right sided reference. Severe constipation. Repeated absence from work and hospitalization. Temperamental.	Periodic attacks of abdominal pain. Nausea. Vomiting with larger meals. Occasionally totally incapacitated. Unstable emotionally.	Abdominal pains around navel. Burning and nausea ½ hour after meals. Heavier foods aggravate more. Worked quite steadily. Stable emotionally.	Abdominal distress centering at navel. Nausea and vomiting. Intermittent incapacitating attacks. Emotional or unstable.
X-ray Previous to Operation.	Stasis to and fro peristalsis in second and third portions of the duodenum. Proximal 6-8 inch of jejunum dilated.	Duodenal cap large. Second and third portions of duodenum dilated slightly. Very active writhing and acute peristalsis. Definite puddling.	Definite puddling of barium in duodenum. Slight antiperistalsis. Follow-up at 56 hours shows cecum and ascending Colon with marked stasis.	Hypomotility 6 hour motor meals. Tendency to stasis and antiperistalsis in duodenum.	Dilated duodenal cap. Dilated duodenum throughout. Active antiperistalsis.	Stasis of duodenum. Some dilatation, antiperistalsis.
Operation	September 1933. Duodenojejunostomy.	September 1933. Duodenojejunostomy.	Duodenojejunostomy. Resection of cecum and ascending colon. April 1934.	Duodenojejunostomy. Freed adhesions of duodenum in gallbladder area. September 1933.	Duodenojejunostomy. V. arch 1931.	Duodenojejunostomy. Freeing of adhesions.
Follow-up x-ray	December 1933. Duodenojejunostomy functioning, normal calibre of duodenum, no evidence of ileus.	June 1934. Duodenojejunostomy functioning freely, no stasis in duodenum.	March 1934. Duodenojejunostomy functioning freely, no evidence of duodenal ileus.	June 1933. Duodenojejunostomy opening showing direct and free action normal motility.	August 1932. Anastomosis functioning. No stasis. No "writhing." No dilatation.	All showed good functioning anastomosis with absence of antiperistalsis.
Progress	Slow for three months, then gained 20 pounds. An accident to her mother brought a temporary recurrence for a few days. Stabilized, working, feels best she has for years.	While he returned to work in three weeks, he continued to have crampy distress. Has improved but is still complaining of digestive distress after eating. Still emotional.	Improvement has been constant with exception of temporary upset, intestinal infection in August 1934. Patient feels much improved. Well stabilized.	Has improved slowly but constantly. Occasionally slight cramps with heavy meals. Not emotional.	Improved at once. Has remained so. No complaints.	Improved in all cases. Three markedly, two considerably.

No physiological change is produced as only a foot of bowel is short circuited. The time of operation usually can be selected and surgical preparation made adequate. A left rectus muscle incision permits the reflection of the transverse colon upward and to the right, exposing the approach through the mesocolon. As in the bowel elsewhere, the side opposite the incoming circulation permits the major mobilization. The vessels enter the transverse portion proximally as related to the center of the loop and hence the mobilization is largely made from the distal or lower side. The ease of anastomosis depends on the mobilization of the duodenum. Hemorrhage is most apt to occur near the mesial end of the transverse loop. A duodeno-jejunostomy at the lower portion of the duodenum will usually adequately drain the obstructed area if due to compression factors near the mesenteric root.

Other surgical procedures than duodeno-jejunostomy must be considered. Bands and adhesions causing distortions may be factors in duodenal stasis and their correction is then necessary. The correction of bands and adhesions is usually simple and should be done but if stasis is due to compression in the distal portion of the duodenum at its point of tunneling, it is evident that severing bands or adhesions at the proximal or middle portion will not relieve an anatomical obstruction at the distal portion. Right colon fixation and renal fixation may in some cases relieve the pressure due to displacement or distortion. Colon fixation or colectomy should only be used in unusual cases and should not be done usually at the same time as a duodeno-jejunostomy because of the additional risk. Right colectomy has been suggested for relief of pressure. I have done a right colectomy in one case for stasis rather than pressure. Gastro-enterostomy is not indicated for duodenal stasis because it does not drain the duodenum. It has no place directly in the treatment of duodenal stasis.

This report consists of five personal cases, all local residents who were studied for some time in advance of operation and have been followed since. The experience of my associates has been on the whole quite similar. It shows the following characteristics. More cases occur in females, usually single. The onset of symptoms is usually in the twenties. All had previous abdominal op-

erations with little or no relief. While having some constant gastric discomfort, there were intermittent attacks of varying severity. The pain center tended above and to the right of the navel. Nausea and vomiting were present in the attacks, sometimes to an extreme degree. The patients were anxious about their rather constant distress and when unable to retain food became very emotional, referring all their symptoms to their inability to handle food.

Duodeno-jejunostomy at the lowermost portion of the transverse duodenum was done in all cases. Adhesions were freed. In one case, a right colectomy was also done because stasis in this portion of the colon was unusually marked. The follow-up x-ray showed good anastomosis in all. One patient still complains of some gastric distress though he has gained in weight and is definitely improved. He has been working steadily since three weeks after his operation. There must be other elements neurogenic or organic in his case because the anastomosis shows good emptying. Another man who was the most stable temperamentally of the group previous to operation has had the best apparent result. He is doing regular work and has no complaints. He recovered quickly.

The other three were females, single, in the late twenties, with histories of repeated attacks severe enough to cause hospitalization. They would become very dehydrated from persistent vomiting. After repeated medical efforts, including hospital regimes, they were operated upon during intervals of improvement. Their recovery was slow and slow recovery is usually to be expected. Two had subsequent gastric upsets shortly after operation but they were due to other factors. The mother of one was in a serious street car accident and the other had an acute summer intestinal infection. All three girls had lost heavily in weight previous to operation and their slow recovery was probably based on their poor nutrition as well as exhaustion psychosis. All have gained markedly in weight; all are usefully employed. Operation apparently relieved a mechanical obstruction which they were not able to overcome without the aid of a short circuiting operation.

The C or U shaped duodenum some 39 cm. in length has most complicated relationships, and

among them of great importance is its tunneling passage near its distal ending where there exists potential compression forces of obstruction. Duodenal stasis unrelieved is increasingly being

considered as a factor in biliary and pancreatic disease and in the causation of ulcer, besides its production of the clinical pictures above described.

A NEW ANAL RETRACTOR*

HAROLD E. HULLSIEK, M.D.

Saint Paul, Minnesota

THE problem of maintaining adequate exposure while operating upon hemorrhoids has always been difficult of solution, attempts usually ending in a limited view of the field of operation, or so many hands holding retractors that little room remains for the operator.

and at each side. Points should be chosen immediately outside of any skin-tabs which one plans to excise. At each of these points a eleven-inch silkworm gut is inserted, passing beneath the skin for a distance of a fourth of an inch, the long ends hanging free. The

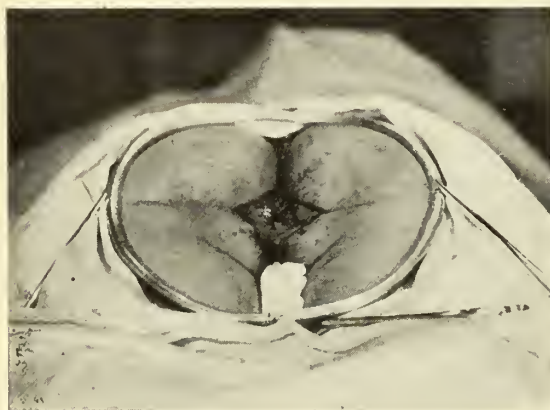


Fig. 1. Retractor in place with patient in prone position.

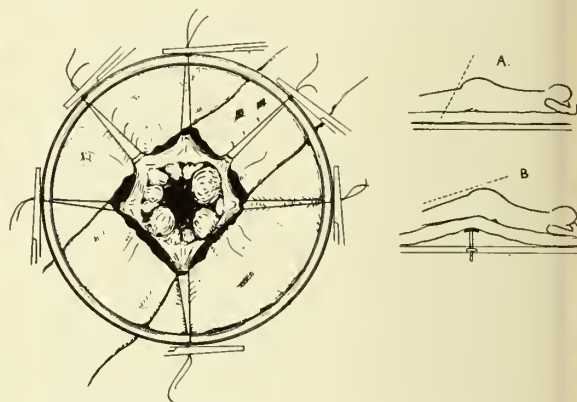


Fig. 2 (left). Anus with six silkworm stay sutures. Fig. 3 (right). A, Field almost vertical; B, field nearly horizontal.

The ring-retractor shown in the illustration* has satisfactorily overcome these difficulties for me, at the present time having been used in over seventy cases presenting all types of hemorrhoids and many varieties of anal orifice configuration.

It consists of a nine-inch ring of malleable metal with regularly-distributed notches on the periphery. It is to be used only with the patient in the prone position, which, by the way is far more comfortable than the much-used lithotomy posture, permits relaxation of the nates, and is more convenient for both operator and assistant. The ring should be used with some form of local anesthesia, spinal, sacral, or local, since when once placed it is fixed, with no allowance for muscular movement caused by straining as occurs with inhalation anesthesia. It is malleable so that when in place it may be moulded to conform to the curve of the buttocks.

With the anal sphincter completely relaxed with novocaine four points are selected respectively in the mid-line anteriorly to the anus, in the mid-line posteriorly,

ring is then placed about the anal orifice and one end of each suture is passed under and one end over the ring at the corresponding notch, where the ends are caught with a clamp. Usually four are sufficient for exposure, but occasionally a third pair give additional exposure if placed in the right and left posterior quadrants. The sutures are drawn taut, one at a time until the pull is sufficient and evenly distributed. If relaxation is as it should be the piles are found to be on an almost horizontal surface instead of the sloping sides of the anal canal.

The advantage of the four-suture traction over the four-clip method is two-fold. The latter requires four extra hands, and in addition oftener than not leaves four small bruised areas where the clamps have been applied. If a kidney-rest or sand-bag is placed under the prone patient immediately distal to the anal orifice, elevating the buttocks, the plane of operation is converted from one nearly vertical to one nearly horizontal. With this appliance correctly applied on a properly relaxed anal orifice, and with the patient prone, the operation of hemorrhoidectomy becomes virtually a one-man operation.

*Retractor made by C. F. Anderson Co., 901 Marquette Ave., Minneapolis, Minn.

EDITORIAL

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BUSINESS MANAGER

J. R. BRUCE

Volume 20 MAY, 1937 Number 5

Benzedrine

BENZEDRINE is a trade name (Smith, Kline and French) for a substance known chemically as "beta phenylisopropylamine." It is known to have several physiologic effects, among which are: elevation of the blood pressure, a stimulating effect on the higher centers of the central nervous system, and the effects of producing relief of gastro-intestinal spasm, shrinkage of the nasal mucosa, an increase in free hydrochloric acid in the stomach and an increase in pepsinogenic activity of the gastric juice. It has been used for some time clinically because of its effect of relieving congestion of the nasal mucosa. Its effect on the blood pressure, which it elevates for periods varying from two to seven hours, is not yet known to be of great aid clinically, although the drug is of benefit in some cases of orthostatic hypotension. The drug has

also been used clinically for the relief of gastro-intestinal spasm during roentgenologic examination of the stomach and intestines, and it may have some value in the treatment of disorders characterized by spasm or increased tonus of the gastro-intestinal tract. Experimental studies have shown that benzedrine has power to arouse animals from barbital anesthesia, which observation led to the use of the drug in the treatment of narcolepsy. The results reported are very impressive, and according to these reports the drug does not lose its effect on repeated administration for this condition.

Benzedrine's present vogue is due chiefly to its effect on disorders of moods, such as depression, on chronic fatigue states and associated symptoms such as vague neuromuscular pains, and on sensations of clouded mentality, introversion and introspection. When administered orally in amounts varying from 2.5 to 20 mg. before breakfast and lunch, in many instances it produces marked relief of fatigue, an increase in capacity for work, a feeling of exhilaration, loquaciousness, loss of appetite, dryness of the mouth, tremor of the hands, and sweating and palpitation—which ordinarily occur less than an hour after administration of the drug. Regular administration over considerable periods of time may lead to loss of weight, apparently resulting from reduced appetite. Sleep is ordinarily interfered with if the drug is administered within several hours before sleep is expected.

Remarkable improvement may be noted when the drug is administered to patients with chronic fatigue states not associated with nervousness and psychoneurosis, and to patients with depression states. The results in this group of cases are sometimes startling, as those who are fatigued, slowed mentally, timid, melancholic, and reserved in speech, quite frequently notice marked improvement in or complete disappearance of fatigue, a speeding of the mental processes, happiness, elation, exhilaration and loquaciousness. Vague neuromuscular pains also may be greatly benefited or entirely relieved. Those who are greatly depressed may promptly acquire an interest in their surroundings, desire

activity, laugh, and become jovial. Ordinarily patients who are nervous and psychoneurotic do not notice great benefit following administration of the drug for their nervousness and neurotic symptoms may be increased. They may feel "jittery" and uncomfortably stimulated.

Patients who have indulged in too-large quantities of alcohol may find that the characteristic morning "hangover" is greatly benefited by administration of the drug, and patients recovering from acute alcoholic bouts may note that the desire for more alcohol is diminished.

One fortunate quality of benzedrine is that the effects of its administration can be determined in one day. If there is no beneficial effect noted from its administration before breakfast and lunch, on one day, it appears useless to administer it over longer periods. However, benefit which may be noted following its administration for one or two days may not persist. This is particularly true in depression states, in which it has been observed that the beneficial results following the administration of benzedrine usually gradually disappear. Also, some patients whose chief symptom is chronic fatigue note progressively diminishing effect, but in other cases it seems to continue to improve the subjective status over considerable periods of time.

Benzedrine does not appear to be toxic in the doses which should be utilized clinically, although the results of prolonged administration are not known definitely. Experiences of the medical profession with dinitrophenol should be kept in mind. The contra-indications for clinical administration are not definitely known, but it appears that benzedrine should not be given to patients with any significant elevation of the blood pressure, to patients with significant cardiovascular disease, or, to patients more than sixty years of age. Furthermore, this drug should not be administered to any patient who is not under the close supervision of a physician until more is known about its possible harmful effects.

As quite frequently happens, the drug has rapidly acquired a vogue for all sorts of conditions. People have kept themselves awake and alert for unreasonable long automobile drives and students have utilized the drug for stimulation and acceleration of mental processes during examinations. Under such circumstances more

common sense and less benzedrine is ordinarily advisable.

The indiscriminate use of this drug cannot be too severely criticized. It is too easy to substitute its use in exhaustion states for careful search for the causes of the exhaustion and the correction of them. In some instances fatigue, for example, may be a protective symptom and harm may result from banishing it. Until there is greater knowledge relative to the clinical use of this drug and the possible harmful effects which may follow its administration, therefore, it should be used cautiously and only by physicians who are aware that harmful effects may possibly follow. It is to be emphasized that, as far as is now known, benzedrine is nothing more than a stimulant and that it does not correct the cause of various subjective sensations and probably does not fundamentally and permanently alter a psychotic disorder or a state of chronic exhaustion or neurosis.

E. V. ALLEN.

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Refresher Courses in Obstetrics and Pediatrics

JANUARY last "refresher courses" were conducted at the University in obstetrics and pediatrics. The courses were so well patronized, some thirty-three doctors attending, that the same course will be carried to the doctors in six different towns—Fulda, Brainerd, St. Cloud, Fergus Falls, Grand Rapids and Mankato—beginning late in May, 1937. Through the allotment to Minnesota by the Federal Govern-

ment of Social Security funds, the State Board of Health is able in coöperation with the State Medical Association and the Extension Division and the Medical School, to promote this post-graduate type of work in obstetrics and pediatrics.

The same clinicians who conducted the course at the University in January will instruct the classes in the towns mentioned. Other courses will doubtless follow and the personnel of the lecturers will vary, names to be chosen from the faculty of the Medical School and memberships of the Minnesota Society of Obstetrics and Gynecology and the Northwestern Pediatric Society. At the meetings in the various towns, one lecture will be given by a visiting pediatrician and one by an obstetrician, on successive Wednesdays, the lectures to be given at 4 p. m. followed by dinner and an opportunity for informal questioning.

If these refresher courses prove as popular when brought to the profession as they were when it was given at the University, they will be well attended which will warrant their continuance.

Tetanus Toxoid Immunization]

IN case of an injury contaminated by soil the possibility of tetanus infection is present and a prophylactic injection of tetanus antitoxin is indicated. Experience in the World War with infected wounds proved the advisability of a second injection ten days after the first because of the temporary nature of the passive immunity produced. A method of producing a more lasting immunity would be a distinct advantage.

There is promise of such a method having been developed. In 1925 the Frenchman, Ramon, first prepared a tetanus toxoid after another Frenchman, Descombey, showed that tetanus toxoid can be detoxified by the addition of formaldehyde as Ramon had shown could be done with diphtheria toxin. Additional investigation showed that a refined tetanus toxoid could be produced by precipitation with alum which not only was much less painful on injection, but produced a greater amount of antitoxin in the injected animal, presumably by its prolonged action.

A number of articles have appeared on the subject of tetanus toxoid since 1925 and although

no reports of large clinical series are available the evidence so far has warranted the acceptance of tetanus toxoid by the Council on Pharmacy and Chemistry and its manufacture for clinical use.

While it has never been accurately determined what minimum number of units of antitoxin per cubic centimeter of blood must be present to assure immunity, the toxoid is apparently capable of producing more than the antitoxin, and therefore should be effective. The antitoxin is, however, slowly produced and diminishes in time, but can be quickly increased to high levels by subsequent injections in most cases.

The recommended procedure is the subcutaneous (the intramuscular injection is said to be less painful) injection of 1 c.c. of tetanus toxoid followed in two or three months by a second injection. The antitoxin produced in the blood reaches its height in three to six months following the second injection. In event of a suspicious injury, a third injection of 1 c.c. is given at once and it has been found that in the majority of cases a very high degree of immunity is produced in a week following the third injection.

Objections to the method are: the difficulty in having a patient report at such a long interval for his second injection; the uncertainty as to the patient's understanding the necessity of another toxoid injection in case of a suspicious injury; the poor production of antitoxin in the blood of at least a certain percentage of adults injected. So far there is no practical way of determining clinically the presence of an immunity. While children develop antitoxin well a certain small percentage of older adults show slight response, which conceivably may not be sufficient to assure immunity.

There are, however, distinct advantages to the method. Many individuals have a sensitivity to horse serum either natural or acquired. As tetanus toxoid contains no serum the danger of anaphylaxis is eliminated. Many individuals have occupations which subject them to the likelihood of injuries and repeated injuries which may become infected with tetanus. Yearly toxoid injections would be particularly applicable in such cases.

Final judgment as to whether toxoid inoculations will reduce the incidence of tetanus must

be withheld until it has been used in thousands of cases. Tetanus infection fortunately is comparatively rare, but the use of tetanus antitoxin is extensive. The case that is prevented is never known. The general adoption of the toxoid by an army actively engaged would settle its value.

At present there seems to be good reason for the use of tetanus toxoid in serum sensitive individuals and its use might well be extended to those who handle horses or are in agricultural pursuits. Local reactions from the inoculations are slight and general reactions few. No serious reactions have been reported.

Fracture Ordinances

THE Fracture Committee of the State Medical Association of which Dr. Roscoe Webb of Minneapolis is chairman, and the Regional Committee of the American College of Surgeons of which he is chairman, are endeavoring to have ordinances passed in every city and town in the state in which ambulances are operated to provide for proper splinting of fractures before the victims are transported to hospitals. There should be no opposition to such a program and it seems inexcusable that such ordinances have not been passed in the Twin Cities.

An ordinance to be effective apparently requires some penalty to make it effective. The following ordinance recently passed at Crookston through the efforts of Dr. Arthur Kahala, is herewith reproduced as a model for other municipalities in the state.

Ordinance No. 248

Introduced by Alderman Frank Buckley.

AN ORDINANCE REQUIRING AMBULANCES TO BE EQUIPPED WITH FIRST AID AND SPLINT APPLIANCES TO BE APPROVED BY THE BOARD OF HEALTH AND REQUIRING AN ATTENDANT WITH A CERTIFICATE OF FITNESS.

The City Council of The City of Crookston Do Ordain:

Section 1.—No person, firm or corporation shall operate or cause to be operated any ambulance, public or private, or any other vehicle commonly used for the transportation or conveyance of the sick or injured, without having such vehicle equipped with a set of simple first aid and splint appliances approved by the Board of Health and having in attendance at all times such vehicle is in use a person who has obtained a certificate of fitness as an ambulance attendant from the Board of Health.

Section 2.—Any person desiring a certificate as an ambulance attendant shall make application in writing therefor to the Board of Health. Before the issuance of any such certificate the applicant therefore must present evidence of his qualifications to fill such posi-

tion and must demonstrate to the satisfaction of the Board of Health his ability to render emergency first aid and to apply approved splints to arm and leg fractures.

Section 3.—Any person violating the provisions of this ordinance shall upon conviction thereof be punished by a fine of not to exceed One Hundred and no/100ths (\$100.00) Dollars or by imprisonment for not more than ninety (90) days.

Section 4.—This ordinance shall be in force and effect from and after its passage, approval, publication and record.

Upon the call of ayes and nays upon the passage of the ordinance the vote stood as follows:

Aldermen voting in the affirmative: Widman Emerich, Eickhof, Spence, Buckley, Linster, Hagen, Hamerlik.

Aldermen voting in the negative: none.

Upon this vote the ordinance was declared passed by the President of the Council.

Passed this 13th day of April, 1937.

J. J. FLYNN, *President of the Council.*

Approved the 16th day of April, 1937.

W. J. KIRKWOOD, *Mayor.*

Attest:

BERGETTA M. LOKEN, *City Clerk.*

CANCER

Aside from the eight diseases which actually registered new minimum death rates in 1936, the only one to show a noteworthy drop last year was cancer. This disease recorded a decline of 2.7 per cent from its 1935 figure. Nineteen thirty-five was the first year, over a long period, to mark a check in the continuous rise in the crude death rate from cancer, and 1936 was the first to register a definite decline.

The increase in the crude mortality rate over a quarter of a century gives a grossly exaggerated picture of the actual rise that has occurred. For example, the crude cancer death rate in 1911, among the Metropolitan Industrial policyholders, was 68.0 per 100,000, while that in 1936 was 93.5, equivalent to a rise of 37.5 per cent; but when allowance is made, by means of rates adjusted for a shift in the age distribution of the policyholders, the increase is reduced to 11.1 per cent.* Even this much lower figure does not take into account several factors which have caused an ever-increasing proportion of deaths to be recorded as due to cancer. The more important among these factors are improved diagnostic procedure and increases in hospitalized and autopsied cases.

The 1936 drop in the crude cancer death rate is, nevertheless, distinctly encouraging; and it is hoped that it marks the beginning of a declining trend which will show that real progress has been made in bringing under control the second disease in numerical importance among all the causes of death, which is still responsible for about 150,000 deaths every year throughout the United States.

Negligible declines from their 1935 mortality rates were recorded for influenza, angina pectoris, and appendicitis.

*At ages 1 to 74 years.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

As The Doctors See It

A new study of medical care in America has just been completed.

Unlike some of its voluminous predecessors, this study is hailed with enthusiasm in most quarters. It is the report on American Medicine made by the American Foundation Studies in Government and it is *not* a study of statistics or a compilation of answers to a fixed questionnaire.

Instead, the Foundation has assembled an important collection of the views held by 2,200 physicians on many aspects of medical care. Most of the physicians have been in practice twenty years or more.

Everybody who is concerned in any way with the delivery of medical care will find interesting reading in the two volume report (cost \$3.50).

'Planning' Is The Answer

Says the *Journal of the American Medical Association*, commenting on it in a current issue:

If any appellation is to be given to this report, it is "thought provoking." The reader must be impressed by the earnestness, sincerity and desire to aid of the great majority who wrote the letters. These actual records of personal experience compare most favorably with previous compilations of inspired statistics collected by economists and social workers who had pre-conceived opinions and pre-digested notions as to what ought to be done with medical practice. This report did not set out to prove that compulsory sickness insurance would solve the medical problem. Neither did it set out to prove that doctors alone could solve all our problems. It was designed to present an adequate picture of the American medical scene with the apparent realization that diagnosis must precede prognosis and treatment. Its most important conclusion is that "planning" and not "a plan" is the answer. Leaders of medical thought and opinion know that intelligent planning will maintain and conserve the real values inherent in good medical practice.

The final section of the summary prepared for release to the newspapers is reprinted here because it provides some provocative observations on the immediate problems that confront every medical society, large or small.

Limited State Medicine And Private Practice

This section assembles the proposals that appear in this correspondence for a further extension of government authority and government funds in the promotion of public health and the provision of medical services, integrated with the private practice of medicine.

The point of view most generally behind these proposals is that increased participation of government by evolutionary process is inevitable and desirable.

Many of the contributors to this chapter look hopefully toward an eventual merging of preventive and curative medicine, and regard insistence on separating them as reactionary and stupid. They believe that preventive medicine will more and more be practiced in the doctor's office and that it will some day be generally recognized that the resources of medical science and the energies of the doctor are properly to be devoted to the prevention as well as to the cure of disease. The better health of the race becomes the objective.

The development of the public health services, federal, state and local, is regarded as an outstanding possibility in the search for solution of present problems.

There is a brief summary of what has been done under the social security appropriations in the way of improving the public health services in various states.

Diseases of Public Interest

It is pointed out that year after year additional diseases are considered to be "endowed with a public interest" involving governmental functioning. The list steadily increases: tuberculosis, cancer, pneumonia, syphilis, have already an admitted "public" status; and there are, in various states, proposals for including diseases of the heart and circulatory system, arthritis and other diseases which have been shown to be a large factor in disability among the population and which require a treatment too long and too expensive to be within the financial compass of most citizens.

The current attempt at venereal disease control

comes in for especial comment, and the need of co-operation between public health authorities and private practitioners is illustrated by reference to the methods required for detecting, diagnosing and treating this disease—and the impossibility of sharply separating the preventive and the curative functions in this case.

One of the most urgent present problems, in general, is felt to be a definition of the truest and most productive relation between private practitioners and public health authorities, whose work, it is submitted, can less and less be sharply dissociated.

A full development of both the preventive and curative aspects of modern scientific medicine makes necessary an integration of public health services with private practice—an intimate, understanding and coöperative development of "state medicine" and private practice—neither of which can apparently reach its ultimate development alone.

There is a discussion of federal responsibility for providing medical care in sparsely populated communities and in areas where uncertainty of crops, drought and other hazards are characteristic and where state funds are also uncertain and obviously insufficient.

There is a summary of the large body of opinion that regards the medical care of the indigent as a logical and direct charge upon tax funds, local to the greatest practicable degree but with state aid, and federal aid under certain conditions and in certain places. In this connection the principle of federal grants-in-aid to the states is mentioned as the best means of working out on a nation-wide base, standards for the care of the indigent, always recognizing the need of variation according to local differences but recognizing also the need of *minimum* standards. Federal participation is suggested as the available means, under the constitution, for enabling states and localities to meet these minimum standards where, without federal stimulus and federal funds, states and localities either would not or could not do so.

Federal Department of Health

A Federal Department of Health is frequently proposed as *justified* under the present powers and degree of functioning of the federal government in matters of health; and as *imperative* with the proposed increases in this functioning indicated by the present appropriations of the Social Security Act, and by such proposals as federal grants in-aid for the care of the indigent sick, mentioned above.

There is a passing reference to the possibility of interpreting (presumably by constitutional amendment) the general welfare clause of the constitution to enable the federal government to establish a national health authority. If this is not done, even under the present constitutional limitations, the federal grants-in-aid principle, as already invoked by the Social Security Act, provides room for the evolutionary development of federal health functioning.

The use of direct tax funds for hospitals is discussed; also the possibility of extending the facilities of tax supported laboratories in order that the scientific

aids to diagnosis may be available to practitioners generally, and therefore to patients of all grades of income, at prices they can pay, and free to the indigent.

The relation of government to medical education is not very fully discussed, but in addition to the point already cited under medical education—i.e., that medical schools can hardly control standards or select candidates for medical education according to a highly selective principle if they are dependent upon tuition fees—there is mention of other aspects of a possible relation between government and the medical schools including a potential relation between university medical schools and public health services.

In the discussion of government aid to research it is recognized that funds of large foundations and philanthropies have hitherto furnished a large part of the support of medical research. There is clear-cut indication that any planning for the organization of medical care on a broad base will need to include provision for competent research, the heart alike of preventive and curative medicine.

New Welfare Legislation In Minnesota

As this issue of MINNESOTA MEDICINE goes to press the long awaited Public Welfare bill has passed both Senate and House and awaits the governor's signature.

It provides for a county welfare board in each county which shall have under its jurisdiction old age assistance, unemployment insurance, provision for the blind, aid for dependent children and relief.

These boards will be made up of five members of whom not less than one nor more than three will be county commissioners. The county commissioners will select ten other names to be submitted to the State Board of Control for selection of the remaining members.

The first duty of all conscientious citizens and especially of the contact committees in each county will be to see that honest and well qualified persons are selected to serve on these boards. This task is particularly important because on this board will devolve the responsibility for selection and hiring of personnel, for formation of policies with regard to relief in each county.

If names of undesirable and unfit persons should be submitted for selection to the State Board of Control medical association representatives should take every opportunity to point them out to the Board. All negotiations with county commissioners and with the county wel-

re boards must be carried on directly by local representatives of the medical societies.

Here is the golden opportunity to establish all over the state the fundamental principles of good medical care which the Council last year decided should govern the administration of medical relief as well as other kinds of medical care; that is, free choice of physician for the patient.

The Physician as a Witness

(Monthly Editorial prepared by the Medico-Legal Advisory Committee)

Many cases of alleged malpractice brought in the courts are lost because of three things—inadequate records of the case; inability of the defense lawyer to bring out salient points; and the attitude of the defendant doctor on the witness stand.

Your Medico Legal Advisory Committee feels that no man, a member of our Association, practicing and entitled to practice our profession in Minnesota needs in anyway to be ashamed of his work if he has performed his duty to his patient conscientiously and to the best of his ability.

The "Hang Dog" persecutory attitude assumed by the defendant in many cases makes a bad impression on the court and the jury, gives the smart plaintiff lawyer his clue and leads the medical man being questioned into troubled waters.

A dignified manner spells learning. Many times there is the temptation, even justification, to tell the other fellow where to get off when an unafraid, natural, modest, frank demeanor will show him where to get on.

Do not lose your temper but be courteous to your opponent's lawyer, especially when you are right. Courtesy pays big dividends in lessened arguments, saved time and unwasted energy.

Use one-syllable, understandable, non-scientific words in your testimony if possible. Remember the court, lawyers and jury are not as well versed in technical terms as you are.

Courts prefer medical witnesses who are attentive to questions, who keep their voices up, answer knowingly and quickly without a waste of words.

Courts as well as people don't mind how much

you say. It's only the number of superfluous words you use in saying it that is objectionable.

Professional Congress

The outlook is for a meeting of moment, nationally, when the Congress of Allied Professions convenes for its afternoon and evening sessions Monday, May 3, in Saint Paul.

The Congress is to be held in conjunction with the 84th Annual Meeting of the Minnesota State Medical Association scheduled for May 3, 4 and 5 at the Saint Paul Auditorium. Only the large evening sessions will be held at the Auditorium, however. The afternoon meeting will be in the ballroom of the Hotel Lowry.

The social service agencies, the dentists, the nurses, the hospital executives and representatives of the government will all have their chance to talk on one of the most provocative subjects before the American public today: the adequacy and availability of medical care in the United States.

More To Talk

The program, as it has finally taken shape, presents a remarkable and a distinguished representation of the professions and the various points of view.

C. Rufus Rorem, Ph.D., of Chicago, formerly associated with the Julius Rosenwald Fund and economist with the Committee on Costs of Medical Care, at present statistician for the National Conference of Social Work and Director of the Committee on Hospital Service of the American Hospital Association, is one of the foremost non-medical speakers on the program. Dr. Rorem will talk in the afternoon and the evening program on the general subjects, "Are Health Services Adequate and Available in the United States?" and "Suggested Solutions to America's Health Problems," respectively.

Chicago Speaker

Helen Beckley, Chicago, Director of Social Service of the Cook County Hospital, will talk in the afternoon. The other professional representatives are: for the nurses, Daisy Dean Urch, R.N., Winona, President of the State League of Nursing Education; for the dentists, E. H. Bruening, D.D.S., Omaha, Chairman of the Economics Committee of the American Dental

Association; for the pharmacists, Charles H. Rogers, D.Sc., Minneapolis, Dean of the College of Pharmacy, University of Minnesota.

A panel discussion will follow the afternoon talks under the chairmanship of B. E. Youngdahl, director of the Division of Coördinated Field Service, State Board of Control, with the following taking part: Pierce Atwater, Saint Paul, Executive Secretary of the Saint Paul Community Chest; Dr. J. L. McLeod, Grand Rapids, Minnesota State Senator; Olivia Peterson, R.N., Minneapolis, Director of Public Health Nursing, Minnesota Department of Health; E. A. Rieke, D.D.S., Saint Paul, President of the Minnesota State Dental Association; Dr. A. F. Branton, Willmar, President of the Minnesota Hospital Association, and F. W. Moudry, Saint Paul, Minnesota State Pharmaceutical Association.

As noted before in these columns, the evening session will provide a unique opportunity to hear several famous authorities on medical care. In addition to Dr. Rorem, scheduled to speak are Rev. Alphonse M. Schwitalla, S.J., St. Louis, Dean of the St. Louis University Medical School and President of the Catholic Hospital Association; Dr. Martha Eliot, Washington, D. C., Assistant Chief of the Children's Bureau, Department of Labor, and Dr. Maxwell J. Lick, Erie, Pennsylvania, President of the Medical Society of the State of Pennsylvania.

Legislature Adjourns

The 1937 regular session of the Minnesota State Legislature adjourned on April 22. The Committee on Public Policy and Legislation submits below a partial report of some of the bills that were enacted into law and some that were defeated. The Committee made every effort to keep posted on all bills that in any way affected the health of the people of the State of Minnesota and the preservation of high standards for those who would be called upon to treat the public. Numerous hearings were held by the public health committees of both the House and Senate and both committees gave every indication of their desire for the expression of the opinion of the medical profession in reference to these matters.

The Legislature enacted into law a so-called

model uniform narcotic act. This law is in many respects similar to the so-called Harrison narcotic act passed by Congress in 1914. The Harrison act is a tax measure and consequently there are certain phases of the narcotic situation that cannot be dealt with by Congress. The law in no way adds to the burden of the medical profession in so far as reports and compliance are concerned. The Minnesota law provides specifically that a compliance with the Harrison act shall be deemed a compliance with the Minnesota law. If a person is convicted or acquitted of violating the federal law he cannot thereafter be tried for a violation of the Minnesota law. The Medical Association believing that such a law is decidedly in the interest of protecting the public health and also is a step in the direction of minimizing crime, gave every assistance to the passage of this bill. The full text of the law will be published in a subsequent issue of MINNESOTA MEDICINE.

The section of the medical act relating to the revocation of license was amended so as to give the Board the power to suspend licenses as well as to revoke them. A further ground for the suspension or revocation of license was added to the amended section being printed in full at the end of this report. The new matter in the law appears in bold face type. Numerous complaints have been made to the medical board involving the unlawful writing of liquor prescriptions, narcotic prescriptions and other acts of misconduct indicating a lack of realization on the part of a small group of physicians of the responsibility and duty that they owe the people of this state as well as their profession. Some of these complaints do not warrant the extreme punishment of a permanent loss of license. It is believed, however, that the suspension of license for a definite period of time will convince these individuals that they too must comply with the laws of this state.

The Legislature refused to pass a bill that would have permitted a masseur to designate himself "doctor of massage." It was the opinion of those opposing the bill that such a designation is misleading insofar as the public is concerned and should not be applied to a group who are permitted to practice in such a limited manner.

The Legislature also defeated a bill that would

have permitted anyone to treat goiters and felons. The bill had for its purpose the removal of these two ailments from the classification of the practice of medicine. We are advised that the bill was introduced because of the efforts of one individual who claimed that he had a cure for goiters and felons. We might add that the bill was unanimously defeated in both the Senate and House.

Additional information concerning bills that were before the Legislature will be published in the June issue of MINNESOTA MEDICINE. The Committee wishes to take this opportunity to express its appreciation of the very courteous and fair manner in which everyone concerned was treated by the Committee on Public Health and Hospitals in the House and the Public Health Committee in the Senate. The Committee also wishes to thank those members of the medical profession throughout the state who gave wholeheartedly of their time to assist us in our work. We believe that much of the success that was achieved was due to the work that had been done in years gone by, by that one individual whose efforts, personality and forceful leadership brought about the increase in membership and the unity of the Minnesota State Medical Association—Dr. Herman M. Johnson. We have missed him greatly but his work is an inspiration to all of us.

Respectfully submitted by
COMMITTEE ON PUBLIC POLICY
AND LEGISLATION

G. I. BADEAUX, M.D.
L. A. BARNEY, M.D.
E. A. EBERLIN, M.D.
W. A. FANSLER, M.D.
R. C. GRAY, M.D.
H. C. HABEIN, M.D.
J. M. HAYES, M.D.
F. H. NEHER, M.D.
M. O. OPPEGAARD, M.D.
W. C. RUTHERFORD, M.D.
C. B. WRIGHT, M.D.
J. F. DuBois, M.D., *Vice Chairman*
L. L. Sogge, M.D., *Chairman*

MEDICAL PRACTICE ACT

"Section 5707. A person not already authorized to practice medicine in the state, and desiring so to do, shall apply to the secretary of the board for examination, and pay a fee of 20 dollars for the use of the board, which in no case shall be refunded. At a time appointed, or at the next regular examination, he shall prove **that he is of good moral character** and that he has completed four entire sessions of not less than thirty-six weeks **each** at a medical school recognized by the board, and has received the degree of M. D. or M. B. He shall be examined in surgery, medicine, obstetrics, eye, ear, nose and throat, and such other branches as the board shall deem advisable. After such examination, the board, if five members thereof consent, shall grant him a license to practice medicine. The examination shall be both scientific and practical, and shall thoroughly test the fitness of the candidate. The board may refuse to grant a license to, or may **suspend or** revoke the license of, any person guilty of immoral, dishonorable, or unprofessional conduct, but subject to the right of the applicant **or licentiate** to appeal to the district court in the proper county on the questions of law and fact.

The words "immoral, dishonorable or unprofessional conduct" as used in this section shall mean: (a) Procuring, aiding or abetting a criminal abortion; (b) advertising in any manner either in his own name or under the name of another person or concern, actual or pretended, in any newspaper, pamphlet, circular or other written or printed paper or document, professional superiority to or greater skill than that possessed by fellow physicians and surgeons, or the positive cure of any disease, or the curing of venereal diseases, the restoration of "lost manhood," the treatment of private disease, peculiar to men or women, or the advertising or holding himself out to the public in any manner as a specialist in diseases of the sexual organs, or diseases caused by sexual weakness, self abuse, or excessive indulgences, or the advertising of any medicine or any means whatever whereby the monthly periods of women can be regulated or the menses re-established, or being employed by or in the service of any person, concern, actual or pretended, so advertising, or in any manner creating a fear of private diseases; (c) the obtaining of any fee, or offering to accept a fee on the assurance or promise that a manifestly incurable disease can be or will be cured; (d) willfully betraying a professional secret; (e) habitual indulgence in the use of drugs; (f) conviction for willfully violating any narcotic law; (g) conviction of offense involving moral turpitude; (h) conviction of a felony; **(i) conduct unbecoming a person licensed to practice medicine or detrimental to the best interests of the public.**

OF GENERAL INTEREST

Dr. J. O. McKeon of Montgomery, has been re-elected mayor for the sixth consecutive term.

* * *

Dr. Myron O. Henry of Minneapolis was the guest speaker at the meeting of the Park Region Medical Society which was held in Alexandria on April 14.

* * *

Dr. H. J. Aldrich, formerly a lieutenant in a CCC camp at Ray, Minnesota, has become associated with Dr. John F. Briggs, of Saint Paul.

* * *

Friends of the late Dr. O. E. Locken of Crookston, have contributed more than \$300 for a civic memorial in his honor.

* * *

Dr. R. V. Sherman, formerly of Thief River Falls, has joined the staff of the Northwestern Clinic at Crookston as specialist in internal medicine.

* * *

Dr. J. Charnley McKinley and Dr. Clarence M. Jackson, both of Minneapolis, have been reappointed to the State Board of Examiners for the Basic Sciences, for six-year terms.

* * *

Dr. and Mrs. Arthur C. Strachauer of Minneapolis, have returned from a two months' cruise down the west coast of South America, through the Straits of Magellan and up the east coast.

* * *

Dr. Charles E. Remy, superintendent of General Hospital, Minneapolis, has recently won a prize of \$200 as third place winner in a national essay contest on the value of hospital systems.

* * *

Dr. George L. Joyce, who has practiced medicine at Stewartville for the past eight years, has taken over the practice of his uncle, Dr. George T. Joyce, at Rochester, Minnesota.

* * *

Dr. Edgar Alphonse Hines, Jr., of Rochester, Minn., is among ninety-two physicians of the United States and Canada recently elected to fellowship by the American College of Physicians.

* * *

Dr. and Mrs. Edward Starr Judd will come from Danville, Pa., the first of July to make their home in Rochester, Minnesota. Dr. Judd will have completed a year's internship there the last of June. He is the son of the late Dr. Edward Starr Judd of Rochester.

* * *

Dr. George M. Higgins of Rochester, a graduate of Knox College, Galesburg, Illinois, in 1914, has been appointed a member of the Alumni Honorary committee for the Knox College centenary, the celebration of which will take place June 11 to 16.

Dr. Francis E. Kibler of Saint Paul, will become a member of the Austin Clinic staff at Austin, about May 1, to succeed Dr. U. S. Anderson. Dr. Anderson left the clinic about March 15 to become associated with Dr. A. C. Strachauer, of Minneapolis.

* * *

Dr. Russell Aanes, son of Dr. and Mrs. A. M. Aanes of Red Wing, has returned to Red Wing after serving his internship at Minneapolis General Hospital. He will be temporarily associated with the Medical Block Clinic at Red Wing.

* * *

The Sixteenth Annual Convention of the American Physiotherapy Association will be held in Saint Paul, Minnesota, June 27, 28, 29, 30 and July 1, 1937. Convention Headquarters will be at the Hotel Lowry. Miss Marian Denny, 1003 Ivy Street, Saint Paul, Minnesota, is publicity chairman of the Minnesota chapter.

* * *

Dr. Henry C. Cooney of Princeton, was the honored guest at a dinner April 19 on his seventy-fifth birthday. Many physicians from the surrounding territory were present. Dr. Cooney came to Princeton in 1888. He established Northwestern Hospital in Princeton in 1900 and has maintained a large practice in that section of the state.

* * *

The American Board of Ophthalmology will conduct an examination in Philadelphia, June 7, 1937, and in Chicago, October 9, 1937. All applications and case reports, in duplicate, must be filed at least sixty days before the date of examination. Dr. John Green, 3720 Washington Boulevard, St. Louis, Missouri, is secretary of the Board.

* * *

Dr. W. C. Alvarez of Rochester, spoke at the meeting of Alpha Omega Alpha at Vanderbilt University, Nashville, on "The Art of Medicine," early in April. He will speak at a number of other meetings before his return to Rochester, including the Boston University Medical School, Alpha Omega Alpha of Harvard Medical School, and the Ohio State Medical Association at Dayton.

* * *

Dr. Kenneth F. Maxcy, Professor and Head of the Department of Preventive Medicine and Public Health at the University of Minnesota since last fall, has been appointed Professor of Bacteriology in the School of Hygiene and Public Health at Johns Hopkins University, his alma mater, effective July 1, 1937. Dr. Maxcy will succeed Dr. W. W. Ford, who is retiring on account of age limitation.

* * *

The Annual Address in the University of Minnesota Cancer Institute Lectureship will be presented by

Dr. Robert S. Stone of the University of California, on Tuesday evening, May 4 at 8:15 P. M. in the Medical Sciences Amphitheater. The title of Dr. Stone's lecture will be "Theoretical and Practical Considerations of Super-voltage X-rays, Neutrons and Artificial Radioactive Substances for Treatment of Cancer."

* * *

Medical technology, a new professional course for women, will be offered at Macalester College next fall. Dr. Kano Ikeda, pathologist at Miller Hospital, Saint Paul, will be in charge. The academic work will be under the supervision of Dr. O. T. Walters, Professor of biology. A limited number of women with outstanding records in the three-year preparatory course will be eligible to take twelve months' additional work. The students will be candidates for the bachelor of arts degree after their work at the hospital and will be eligible for examination by the American Society of Clinical Pathologists which grants degrees in medical technology.

HOSPITAL NOTES

A drive has been started at Lakefield to raise \$13,000 for a hospital.

* * *

Two new additions have been made to the staff of St. Luke's Hospital at Thief River Falls. Dr. Carl L. Eckhardt will have charge of the x-ray department and general medicine. Dr. Hovald K. Helseth will have charge of the obstetrics and pediatrics divisions, as well as general medicine.

* * *

Dr. B. W. Bunker and Dr. F. E. Mork of Elk River, are taking over the old Kline Hospital at Anoka, which has been closed for several years. This hospital has a capacity of fifty beds, including wards and private rooms, and is in good condition.

* * *

Dr. R. W. Campbell of Cass Lake has acquired property including a building formerly used as a hotel, which he expects to modernize and remodel for hospital and office facilities.

* * *

The new \$60,000 hospital at Staples was opened for patients early in April. It can accommodate twenty-one patients. Civic organizations are helping to equip the hospital.

* * *

The new wing of St. Barnabas Hospital is now ready for use. It was erected at a cost of approximately \$275,000 and increases the bed capacity of this hospital to 175. The hospital is now one of the most scientifically equipped hospitals in America, and is one of the first hospitals to be completely air-conditioned. The original hospital was opened in 1871, the present building being built in 1894.

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR MAY

The Minnesota State Medical Association
Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 9:45 o'clock every Saturday morning over Station WCCO, Minneapolis and Saint Paul (210 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

May 1—Child Health Day.

May 8—Minnesota State Medical Association.

May 15—Some Major Health Problems.

May 22—Nervous Exhaustion.

May 29—Artificial Dentures.

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The annual meeting of the American Association for the Study of Goiter will be held at Detroit, Michigan, June 14, 15, 16, 1937, with headquarters at the Book-Cadillac Hotel. This meeting follows the A.M.A. meeting at Atlantic City.

The meeting will consist of addresses on various phases of thyroid disease and clinics at local hospitals. Dr. Nelson M. Percy, Chicago, is president; Dr. Frank H. Lahey, Boston, president-elect, and Dr. W. Blair Mosser, Kane, Pennsylvania, corresponding secretary of the Association.

INTERNATIONAL CONGRESS OF RADIOLOGY

The fifth annual International Congress of Radiology will meet at the Palmer House, Chicago, September 13-17, 1937. This is the first time the Congress will have met in this country. Delegates and guests from all over the world will attend and the addresses will be given in the speaker's own language and automatically flashed on screens in English, German and French. Dr. Arthur C. Christie, Washington, D. C., is president of the Congress, and Dr. B. H. Orndoff, 2561 N. Clark Street, Chicago, is general secretary.

WASHINGTON COUNTY

The Washington County Medical Society held its regular monthly meeting March 9.

Dr. Elmer M. Rusten of Minneapolis was the speaker and his subject was allergy. He gave the newer ideas on this important subject in a very instructive and acceptable manner.

* * *

The Society held its regular monthly meeting April 13. The guest speaker was Dr. G. E. Fahr of Minne-

apolis and his subject was hypertension. He spoke of the research work done by him and others, especially at the University of Minnesota.

Dr. E. K. Geer of St. Paul read the x-ray pictures of positive reactors to the Mantoux test which were taken at the Stillwater High School the latter part of February.

EIGHTY-FOURTH ANNUAL MEETING STATE MEDICAL ASSOCIATION

May 2, 3, 4 and 5

Highlights

Sunday, May 2.—Business sessions of the association will begin with a meeting of the Council, Sunday, 9 a. m., at the Hotel Lowry. At 3 p. m. the House of Delegates will hold its first session in the Hotel Lowry Ballroom to be followed by individual meetings of the seven reference committees that will consider the voluminous committee reports of the association. The Council will meet again at 5 p. m. and at 7:30 p. m. the House of Delegates will reconvene. E. H. Skinner, Kansas City president-elect of the American Radium Society who will be in St. Paul to deliver the annual Russell D. Carman Memorial Lectureship, will talk to the delegates at that time on the subject: How Kansas City Profession is Meeting Social Security Problems. Olin West, Secretary and General Manager of the American Medical Association, will talk on the subject "Better Health Activities" at the same meeting.

Monday, May 3.—An important scientific program is scheduled with separate sections on medicine and surgery, morning and afternoon; scientific demonstrations and exhibits at special hours morning and afternoon. Two important general assemblies with Dr. Skinner giving the Russell D. Carman Lectureship on radiology, and Robert Stone, San Francisco, giving the Citizen's Aid Lectureship on cancer. A symposium on peptic ulcer for both sections at 4 p. m. followed by a panel on the subject.

During the afternoon and evening, the Congress of Allied Professions, held under the auspices of the state medical association but with representatives of all of the professions allied in the practice of medicine and care of the sick actively participating. The Congress proper will begin at 2 p. m. in the Hotel Lowry Ballroom. It will be preceded by individual group luncheons arranged by the participating groups and it will be followed in the evening by an important general assembly on the subject: "Suggested Solutions to America's Health Problems" at the Auditorium Theater. (See Medical Economics section in this issue for further information on this Congress.)

Tuesday, May 4.—There will be separate sections on medicine and surgery again, interrupted by demonstration and exhibit hours; also by two visiting scientific speakers appearing before a general assembly, John

M. Wheeler, New York City, professor of Ophthalmology at Columbia University, and Francis D. Murphy, Milwaukee, Professor of Medicine and Director of the Department of Medicine, Marquette University.

A general assembly on Medical Economics with Maxwell J. Lick, Erie, Pa., President of the Medical Society of the State of Pennsylvania; Nathan B. Van Etten, New York City, Speaker of the House of Delegates of the American Medical Association, as speakers.

An Industrial Dinner at which President A. W. Adson will preside and the Honorable Voyta Wrabetz, Madison, Chairman of the Wisconsin Industrial Commission, will be the principal speaker, will conclude the doctors' sessions of the day. The evening will be devoted to a Public Health meeting to be held in the Saint Paul Auditorium Theater at which the Rev. Alphonse M. Schwitalla, S.J., Saint Louis; Dr. Van Etten, Raymond A. Vonderlehr, Assistant Surgeon General of the United States Public Health Service, and Walter C. Alvarez, Rochester, will talk. This meeting will be held under the sponsorship of the Ramsey County Medical Society and the Ramsey County Public Health Association. Mr. Carl W. Cummins, Saint Paul, will preside.

Wednesday, May 5.—The entire day, with the exception of a general assembly for installation of new officers, will be devoted to the Northwest Industrial Medical Conference at which President Adson will preside. Several distinguished visitors will speak, including Michael L. Mason, Chicago, and Dr. Lick, as well as leaders in industrial medicine in Minnesota. This is the first conference of its sort ever held in connection with a state medical meeting. It will conclude with a panel on the subject directed by the chairman, which will also conclude the meeting.

For further details on these sessions see the printed programs sent to every member through the mails.

Not only physicians, but dentists, social workers, nurses, industrial surgeons from all over the Northwest including the Great Northern Surgeons who have chosen to join with the medical association for the Wednesday program, will attend this meeting. *Make your hotel reservations immediately.*

Auxiliary Sessions

An interesting and attractive program of business sessions and social events has been arranged for members of the Women's Auxiliary and all visiting women. The Auxiliary program will begin with a State Board meeting and luncheon at the Saint Paul Athletic Club, Monday, to be followed by a tea in the afternoon at the home of Mrs. H. B. Zimmerman, 1530 Edgumbe Road.

The annual meeting of the organization will be held Tuesday morning at the Saint Paul Hotel followed by a luncheon. A special dinner for Auxiliary members and visiting women will be held at the Saint Paul Hotel at 6 p. m.

PROCEEDINGS of the MINNESOTA ACADEMY of MEDICINE

Meeting of March 10, 1937

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 10, 1937. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the president, Dr. E. M. Jones.

There were forty-seven members present.

Minutes of the February meeting were read and approved.

The president called attention to the new screen which Dr. Thomas S. Roberts had presented to the Academy. On behalf of the members, Dr. Jones said he wished to accept this gift and express the very deep appreciation of the members to Dr. Roberts.

The scientific program followed.

PNEUMONIC PATHOLOGY IN THE UPPER LUNG FIELDS

Inaugural Thesis

LEWIS M. DANIEL, M.D.

Minneapolis

The purpose of this paper is to present the problem which confronts us in the differentiation of tuberculous and non-tuberculous pulmonary pathology where we have clinically the picture of prolonged or unresolved broncho-pneumonia, and where the evidence from the laboratory and the x-ray is inconclusive. I would like to summarize briefly what has been found to be pertinent in the meagre literature on this subject and to review four cases in point which have been under observation during the last year.

In the French literature considerable attention has been given to the transitory shadows of pulmonary consolidation which, although they are short-lived, present about the same initial problem in diagnosis. Jeanneret and Fame, in *Revue de la Tuberculose*, December, 1933,⁵ discussing the subject of fugacious x-ray shadows, cite several cases in which the differential diagnosis between tuberculosis and influenzal broncho-pneumonia could be made only by studying the manner of resolution as shown in serial x-rays. At the outset this type of shadow, which they describe as an "Ombre radiologique fugace," resembles tuberculous pneumonia. The absence or mildness of symptoms and the disappearance often in as short a period as one week decides the question, but many people, according to the writers, have been and are being institutionalized for months on the evidence of a single x-ray.

Cain, Oury, and Barnaud, in the *Bulletin et Memoires de la Societe medicale des Hopitaux de Paris* (1932),³ cited cases in which the mode of onset and early symptoms made them hesitate between the diagnosis of tuberculous pneumonia and a mild broncho-pneumonia. X-ray evidence distinctly favored tuberculosis but a

plate taken a month later showed resolution to have taken place to such an extent that their diagnosis was abandoned.

Bernard and Lamy,² writing in the same publication in 1933, presented two more such cases in an article entitled "Pneumonies prolongees simulant la tuberculose." In the first case the findings one and one-half months after the onset were still characteristic of tuberculosis but, because of former experience, they refused to make a positive diagnosis. At the end of three months the chest was clear. The second case was almost identical. Both cases were in the upper lung fields.

The French writers on the subject feel that the sudden onset of the acute episode is the most important circumstance which might lead to the diagnosis of a non-tuberculous lesion.

A pertinent article on this subject was written by Dr. R. G. Allison¹ in 1926. He mentions the struggle of the clinicians and the roentgenologists to arrive as early as possible at a positive diagnosis in chest pathology, an enthusiasm which resulted in many mistakes. He believes that there are many cases in which pneumonic processes occur in the upper lung field in which serial x-rays may reverse the diagnosis favored in the first x-ray and, furthermore, to quote "A critical review of these cases, after the end-result has been determined, has given no additional information as to how we may differentiate the tuberculous from the non-tuberculous, at the time of the first examination."

Case 1.—A woman of seventy, whose previous examinations had shown evidence of healed tuberculosis, caught a cold. A week later a cough developed and then chills and fever mounting to 103°. She had physical signs characteristic of broncho-pneumonia and was hospitalized. X-ray taken shortly after her admission to the hospital showed consolidation of part of the upper right lobe and it was interpreted as tuberculous. Her leukocyte count never went above 8,000 while she was in the hospital. Sputum examinations were negative. She continued to have a fever of 99.6° to 100° for a month. A second x-ray was taken at that time. The upper right lung showed only the evidence of the old fibrous lesion which had been there before, but a new area of consolidation extending out from the root of the right lung was described. From the x-ray it was impossible to say whether this represented broncho-pneumonia or an extension of tuberculosis. During the next three weeks she was afebrile and improved rapidly in strength so that she was up and around. A final x-ray, taken two months after the first one which had so strongly suggested tuberculosis, showed nothing to support this diagnosis.

Case 2.—The second case is that of a man of fifty, first examined about a year ago because of a digestive upset. At that time it was noted that there was tuberculosis in one member of his family and that he had evidence of an old healed process. He remained well until May, 1936, when he contracted an acute respiratory infection. He had chills and fever mounting to 103° at the outset, and considerable prostration. The physical signs in the chest were absent except for a

small area of bronchial breathing in the right axilla. The clinical diagnosis was broncho-pneumonia and it was believed to be limited to a very small area. One month later he was entirely free from symptoms. He had had no cough and no fever for about two weeks. From the fluoroscope it appeared that his pneumonia had not resolved. An x-ray taken at the time was suggestive of tuberculosis and the man was sent home to be quiet for a month to see what changes would develop. This observation and rest treatment continued for five months. The patient gained twenty-five pounds and felt better generally than he did before his illness. He has never had any cough or temperature since the acute stage of his illness. There has been no change in his x-ray picture during this period of five months. It seemed as though we might disregard the x-ray picture; but finally, after repeated attempts to get a satisfactory sputum specimen, we were successful, and found tubercle bacilli.

Case 3.—The third case which I wish to summarize is that of a girl of twenty-two, who, after an acute upper respiratory infection which continued for two weeks, was x-rayed and advised that she had tuberculosis and must go to a sanatorium. At that time she had a mild unproductive cough, a temperature which rose to about 100° in the afternoon, and she complained of feeling very tired. She had physical signs of bronchial breathing in small areas in both the right and left upper lung fields. Laboratory findings were negative except for a leukocytosis of 17,000 with 74 per cent polymorphonuclears. (The x-ray plate taken at that time was shown.) Report on this is as follows: "Pneumonic consolidation left upper lobe and base of the right upper lobe. While this lesion has the characteristic appearance of pneumonic tuberculosis, I believe that further plates should be made in a few weeks to determine definitely, etc." After one month of rest at home she was x-rayed. She had gained fifteen pounds and had no cough or fever. The x-ray showed nearly complete resolution of the infiltration of the right lung, but still considerable remaining in the left upper lobe. It was felt that some of the lesion was acute pneumonia which was resolving and it was still impossible to say whether the remaining consolidation was unresolved pneumonia or tuberculosis. In October she felt so well she was allowed to go back to work. Pictures taken at that time still showed some infiltration on the left side, but the right side was practically clear. The roentgenologist felt that the long delay in this resolution would indicate that the lesion was tuberculous. Clinically, this girl is well; no fever, no cough, no fatigue, sedimentation rate normal, hemoglobin 85 per cent, weight 20 pounds more than last winter.

Case 4.—One more case before I attempt to comment. This is a man of thirty-six who was seen last February with what appeared to be post-influenzal bronchitis. He recovered completely in two weeks, or would have perhaps if an x-ray film had not been made of this chest. Diagnosis: moderately advanced fibrotic tuberculosis of productive type with evidence of recent activity. His life and activities were, of course, modified after this but, from that time to the present, there has not been a single symptom or complaint which might be related to tuberculosis. Periodic x-rays have shown no change except that one taken in October was reported as showing a tendency to quiescence and in another examination made in another city in November it was thought that the fibrosis was of no significance at the present time.

In a chart which is represented here, an attempt is made to summarize the findings in these four cases.

SUMMARY OF FINDINGS IN FOUR CASES

F-70	M-50	F-20	M-36
.....All had positive tuberculin tests.....			
.....All had accelerated sedimentation rates at the outset			
.....All had negative sputa at the outset.....			
.....All had acute onset.....			
Three had chills and fever with temp. of 102°, which gradually subsided over a period of about 1 month.			Fever for one week.
Three had moderately severe cough and complained of chest pain.			Slight cough. No pain.
Mucopurulent sputum.	Little or no sputum in any of these instances.		
Three showed physical signs of broncho-pneumonia of limited extent.			Increased bronchial sounds with moist râles.
Coarse râles.	No râles.	No râles.	
W.b.c. 7,200 P.m.n. 83%	W.b.c. 12,000 P.m.n. 61%	W.b.c. 17,000 P.m.n. 4%	W.b.c. 17,000 P.m.n. 80%

INITIAL X-RAY EVIDENCE

Tbc. Pneumonia (?)—in first three cases....	Fibrotic productive with acute infection superimposed.
---------------------------------------------	--------------------------------------------------------

FINAL X-RAY EVIDENCE

Resolved broncho-pneumonia. No recent tbc.	Fibroid consolidation tbc.	? Shadow still disappearing.	Old fibrosis—quiescent.
No symptoms.	Positive sputum.	No symptoms or signs. Sedimentation normal	Same status as before.
Activity resumed.	Treatment.	Gain 20 lbs. Working.	No trouble.

This recitation of four related cases of pulmonary pathology is of no importance in the advance of our knowledge in that field except for the fact that it presents the problem of the internist who is not specializing in chest diagnosis, confronted with contradictory findings, anxious patients and considerable responsibility.

It is safe to say that the acceptance of first x-ray impressions in these cases would have been unfortunate. The roentgenologist suggested subsequent study in his first report.

It must be emphasized that the character of the initial illness did not furnish any satisfactory indication of the ultimate outcome.

My third point is that in these four cases, all observed carefully in the last year, clinical observation and laboratory findings gave better guidance for the ultimate conduct of these cases than did the x-ray findings. However, the x-rays of course were of great value in correlating the clinical conclusions.

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THIRTY-TWO YEARS OF PATHOLOGY AND SURGERY IN ONE INDIVIDUAL

A. R. COLVIN, M.D.

Saint Paul

This case is shown and reported to call attention to the recuperative power of the human and the possibilities of surgery extending over a period of thirty-two years. Briefly enumerated is a list of conditions and operations.

1. Mastoid suppuration.
2. Opening abscess of jugular vein.
3. Arthrotomy of knee for suppuration.
4. Arthrotomy of shoulder for suppuration.
5. Opening abscess on chest wall.
6. Amputation through thigh for intractable suppuration of knee joint. (Dr. Gilfillan.)
7. Repair amputation stump.
8. Cystoscopies.
9. Ureteral calculi removed.
10. Hemorrhoidectomy.
11. Prostatic abscess following urethritis.
12. Osteotomy of femur from deformity following dislocation of hip.
13. Tonsillectomy. (Dr. Warren.)
14. Herniotomy. (Dr. Hauser.)
15. Fracture of femur.
16. Cholecystectomy for cholecystitis with calculi. (Dr. Hauser.)
17. Bursting open of incision for above.
18. Ruptured wound repaired.
19. Repair of abdominal hernia.
20. Thoracoplasty for pulmonary tuberculosis. (Dr. L. Daugherty.)
21. Removal of diverticulum of esophagus. (Dr. Greth Gardiner.)
22. Open cervical abscess.
23. Tracheotomy for tuberculosis of larynx. (Dr. Gardiner.)

Since two years after the beginning of his surgical life, this patient has worked steadily except for an occasional holiday to have another operation performed. There are some features of his excursions into surgery which seem worth while relating.

The patient is a man, aged fifty. He was admitted to Ancker Hospital on February 7, 1905, in a delirious state. He had a suppurating shoulder and knee joint and an abscess of his chest wall. These evidently were localized lesions due to pyemia. Further investigation revealed suppurating otitis media, with tenderness over the mastoid process and along the course of the internal jugular vein. On February 9, 1905, the jugular vein was exposed and opened and found to contain pus, the pus being limited below by proliferating endophlebitis. The mastoid suppuration was dealt with and the sigmoid sinus contained pus which was limited by proliferating endophlebitis above, but was continuous with the pus in the vein below. The suppurating knee and shoulder joints and the abscess in the chest wall were then opened and drained.

While reviewing once more phlebitis, thrombosis, embolism and related conditions, one was impressed again with the importance of keeping in mind the vari- quences, and the manifold reactions of tissues to in- able nature of infections in their course and conse- fections. It was interesting, for instance, to note the swing from Hunter's position that phlebitis is primary to the position of Virchow that thrombosis is the cause of the phlebitis, and the swing back again to the opin- ion now held that in the great majority of cases the thrombosis is secondary to the phlebitis and that many of the so-called bland thromboses are really due to mild or non-suppurating phlebitis such as occurs in influenza, pneumonia, postoperative, etc.

Phlebitis with consequent thrombosis can in this sense be likened to the various grades of arthritis and, indeed, I shall always remember the patient who came to me after an operation for simple hernia, who, fol- lowing a postoperative phlebitis, suffered from multiple non-suppurating granulating arthritis from which he was permanently crippled. I opened one of the joints and so demonstrated the granulating character of the arthritis. In another case, following a suppurating ten- don sheath infection, there developed multiple abscesses in the calf muscles, with a non-suppurating shoulder and hip joint infection without demonstrable effusion. This patient recovered, with some stiffness of both joints.

I recall a mastoid case in which a diagnosis of lat- eral sinus phlebitis was made; the upper end of both femurs were involved in suppurative osteomyelitis; the sinus was not opened, and the boy recovered. The sinus thrombosis quite evidently was not of the sup- purating kind; the osteomyelitis was.

While reflecting on these and other cases, I was impressed with the infrequency with which the lungs —through which the microorganisms have to travel to reach the general circulation—are the subject of in- flammatory reaction. McEwen, however, in his great work on pyogenic disease of the brain and spinal cord, divides his cases of sinus infection symptomatically into: (1) pulmonary; (2) enteric or abdominal; and (3) meningeal. I had one patient, a woman, who, after sinus infection due to mastoid disease and opera- tion thereon, developed pneumonia and empyema in the midst of pregnancy and was delivered of a normal child before leaving the hospital. Perhaps sinus phleb- itis is recovered from more often than we know. Cer- tainly the non-suppurating kind does.

It is instructive that in this man's case, which we are presenting tonight, the thrombosis was limited by endophlebitis both in the jugular vein and lateral sinus, thus effectually walling off an abscess in a section of the vein.

The diagnosis of his ureteral stones at a time when urethritis complicated the picture and x-ray was poorly developed, was somewhat difficult; he consequently suf- fered a good deal from pain in the back and left lower abdomen, and thus had a working knowledge of kidney pain. Later he began to complain of "kidney pain" on the opposite or right loin, which, he said, was simi- lar to that he had had before on the left side, and in- sisted that the right kidney be operated upon. This

was, of course, refused and it was not until some time later that I discovered that his hip on the left side was ankylosed in a faulty position of flexion of about 35 degrees. An x-ray disclosed a hip dislocated on the dorsum of the ilium. This dislocation was due to the position in which he lay for so long with a suppurating knee. After observing his manner of walking it was seen that with the artificial limb worn with the stump, in a fixed flexed position, each step was practically a contortion of his lumbar spine. It was concluded that his pain was due to a traumatic arthritis or sprain of the spine, and osteotomy through the base of the neck resulted in a corrected position of his stump with complete relief of his lumbar pain; and there has been no recurrence.

Except for the various surgical experiences enumerated, he has remained well and is now again very insistent on going back to work, saying that he feels better than he ever did in his life.

The patient was presented.

Discussion

DR. WILLIAM DAVIS (Saint Paul): I am not going to discuss Dr. Colvin's case from the surgical stand-

point, but wish to make one or two philosophical observations that came to me as I listened to the report.

In his lectures on anatomy to our class, Dr. Oliver Wendell Holmes presented a tattooed man who was covered from head to foot with tattooing—figures and animals and devices of all kinds. Dr. Holmes, in commenting on him, very gravely said "This man is an example of the tortures that man can inflict and that man can endure." To paraphrase Dr. Holmes, this patient of Dr. Colvin is an example of the operations that the surgeon can perform and the patient can endure. I think the patient was extremely fortunate to have fallen into the hands of a man who could follow him through his checkered career and relieve him as he went along. (By the way, the tattooed man turned out to be a fake. His tattoo marks were painted on the skin. This man is not a fake.)

The meeting adjourned.

ALBERT G. SCHULZE, M.D., *Secretary*.

TRANSACTIONS of the MINNEAPOLIS SURGICAL SOCIETY

Meeting of April 2, 1936

The regular monthly meeting of the Minneapolis Surgical Society was held in the lounge of the Hennepin County Medical Society rooms on April 2, 1936. The meeting was called to order by the president, Dr. F. A. Olson, at 8:00 p. m.

The following scientific program was presented.

EXTRAPLEURAL PNEUMONOLYSIS WITH PARAFFIN PLOMBE IN THE TREATMENT OF PULMONARY TUBERCULOSIS

T. J. KINSELLA, M.D.

Minneapolis

Abstract

Extrapleural pneumonolysis is not a new procedure but it has not, so far as I know, been used to any great extent in this section of the country. The original extrapleural stripping was performed by Tuffier in 1891 as a preliminary to the excision of a tuberculous nodule of the lung. Schlange in 1907 utilized a temporary extrapleural gauze pack. In 1910 Tuffier adopted the use of a permanent extrapleural fat filling and later utilized a lipoma and a resected portion of omentum for the same purpose. Jessen, in 1913, performed a bilateral operation, using a fat pack. Paraffin, as used in the present series, was first utilized by Baer of Davos in 1913. The proper term for the operation is "pneumonolysis" and not "pneumolysis" for the procedure implies a freeing of the lung and not of air.

Extrapleural thoracoplasty holds an established place in the treatment of pulmonary tuberculosis but it does present certain disadvantages which under certain circumstances may induce one to turn to some other procedure in preference to it. It is a relatively serious

surgical operation, producing a certain amount of deformity of the thoracic cage. Resection of portions of even a few ribs interferes with the respiratory activity of the ribs over a rather wide area which if utilized as a bilateral procedure, might prove a rather serious handicap to the patient. Partial operations are particularly likely to prove inadequate. Extrapleural pneumonolysis is a less serious operation which, under certain circumstances, offers greater local collapse than even a radical upper thoracoplasty, with no deformity save the scar. The operation as we have used it, is performed under local anesthesia through a posterior incision the same as thoracoplasty. A 12 cm. segment of the fourth or third rib is resected subperiosteally in the paravertebral region. The periosteum of the rib bed is then incised longitudinally and the lung stripped free from the chest wall extrapleurally or extrafascially over the posterior, lateral and anterior aspects, leaving a small attachment at the apex. After control of all bleeding, this space is packed full of plastic paraffin (melting point 48° C.) containing .5 per cent iodoform, pressing the lung against the vertebral column. The periosteal bed and intercostal muscles are then closed in two separate layers, and the external wound closed the same as in any thoracoplasty procedure.

Extrapleural pneumonolysis should never be attempted in the presence of any free pleural space or over a very large peripheral cavity, if rupture of the pack into the pleural cavity or lung is to be avoided.

To date we have utilized this procedure very cautiously in a small group of patients presenting small isolated apical cavities either unilateral or bilateral, in the presence of some type of contralateral collapse, in an attempt to conserve as much breathing space as possible and also in patients who are not particularly good

cks for thoracoplasty. The use of very large packs has been avoided, the average size being 285 grams with a maximum of 440 and a minimum of 188 grams. Thus far, with the first operation performed a little over two years ago, we have not encountered infection, extrusion of the pack, migration of the paraffin, or perforation of the lung. The procedure has now been used thirteen times on eleven patients as follows: In three presenting contralateral collapse; in two as a primary, bilateral procedure; in one as the first stage of a contemplated bilateral operation; in four for localized apical cavities and in one who was considered unstable for thoracoplasty because of vascular disease. Eight of these patients, who presented positive sputum prior to operation, have become negative. Two, who were previously negative, have remained so, and only one has retained a positive sputum, which we are convinced is coming from the opposite lung. A similar procedure is contemplated on the opposite side, as he originally had bilateral apical cavities.

From this limited experience, we feel that this procedure has a definite small but valuable field of usefulness in the treatment of specially selected cases of isolated cavernous tuberculosis where a limited or bilateral collapse is desired. The field is definitely more restricted than that of extrapleural thoracoplasty which is far more valuable in extensive disease.

Discussion

DR. GRETH GARDINER, St. Paul (by invitation): I have followed Dr. Kinsella's work for a long time. I have been quite an advocate of the paraffin pack. I have not had the foresight he has had to use it. I feel Dr. Kinsella feels, that it has a very limited usefulness. I recall that Dr. Archibald came here about seven or eight years ago and we had a patient with a lateral apical cavity and we invited him to operate on this patient. He felt that he could not operate on the patient, but he advised what to do. On one side he advised us to put a plug of fat and on the other side to do a thoracoplasty. We proceeded to put in fat from the abdomen and the patient died from sepsis. Dr. Archibald was advised about this thing and he said that he had tried a few fat plugs, also used lipomas or extrapleural cavitation collapses.

I had occasion last fall to see Dr. Alexander in Ann Arbor and he had done a bilateral apical thoracoplasty with not a very good result. I asked him what he thought would be the thing to do and he was very enthusiastic about the paraffin pack. I have used it on our cases.

Dr. Kinsella says that his packs have not migrated. The first case, I put a pack in a young girl, twenty-five years of age; she could not stand a thoracoplasty. It was very satisfactory and she had a negative sputum. About two or three months later she returned and the pack had migrated to her neck. Here she had this great big pack in her neck. Of course, I was all ready to remove the pack from her neck. It finally went down where it belonged and stayed there. They do migrate. There have been cases on record in foreign literature where they have sloughed out and the patients have spit out paraffin. I do feel that the paraffin pack has a place. Dr. Rogers reports in 1925 two cases that had been there for fifteen years without any subsequent symptoms. The pack has no reaction as a foreign body. I still feel that it has a place, but not to take the place of thoracoplasty.

I have enjoyed what little I heard of Dr. Kinsella's

discussion and I am certainly going to use a pack in certain patients.

ESSENTIAL HYPERTENSION: SURGICAL TREATMENT BY RESECTION OF SPLANCHNIC NERVE AND REMOVAL OF FIRST AND SECOND SYMPATHETIC LUMBAR GANGLIONS, AND PARTIAL RESECTION OF SUPRARENAL GLAND

ALFRED W. ADSON, M.D.

Rochester, Minnesota

Abstract

Dr. Adson described the clinical picture of essential hypertension which appears most often in the third and fourth decades, may be slow, moderate or rapid in its progress and is due to a disturbance of the neurogenic endocrine vascular mechanism.

The sudden drop in blood pressure following spinal anesthesia led to the attempt to treat hypertension by attacking the sympathetic nervous control. The part played by the endocrine gland further indicates the surgical attack on the adrenals.

The author refers to Keith's classification of essential hypertension of benign, early malignant and malignant hypertension, which although not entirely satisfactory may be used until a better one is devised.

In selecting patients amenable to surgical treatment, the rate of progression of the disease, the response to medical measures, the effects of the "cold pressure test," the age of the patient and the amount of cardiovascular and nephritic damage must be considered. Patients in the third and fourth decades, with comparatively mild symptoms but who respond on the least excitement with systolic pressure peaks of 200 or more, respond best to surgical treatment. The malignant group responds the least as the damage is more likely permanent.

The speaker described the technic of his subdiaphragmatic approach and splanchnic nerve resection with lumbar sympathectomy. In the light of Crile's and DeCourcy's work, he has resected the outer half of the suprarenal gland on each side in thirty-six cases in conjunction with the splanchnic nerve resection and removal of the lumbar ganglions.

The speaker summarized as follows:

In reviewing the postoperative results following ventral root rhizotomy and extensive subdiaphragmatic resection of splanchnic nerves with removal of the upper two sympathetic lumbar ganglions it is apparent that some patients respond in greater degree than others to vasodilating measures. Those who give short histories, who have mild symptoms, and whose blood vessels have not become sclerotic, obtain a greater drop in blood pressure than those who come for treatment late in the course of their disease.

Improvement in clinical symptoms is probably more manifest than the actual drop in blood pressure, since these patients very promptly inform us that their throbbing headache, cardiac consciousness, and precordial

distress, disappear. The ocular symptoms as well are markedly improved. Spasm of the retinal artery is less, a phenomenon which is difficult to understand since these vessels have not been denervated by either the rhizotomy or splanchnic resection. It would thus appear that part of the spasm is a defense mechanism to protect against rupture, but which also works in a vicious circle to contribute to the phenomenon of vaso-spasm and hypertension. The reduction of blood pressure seems to diminish the reflex stimulus, which accounts for some of the relaxation of the vessels as observed by studies of the retinal arteries in the various phases of the disease and its treatment. Retinal hemorrhages and papilledema will often disappear following sympathectomy. If the damage to the kidneys or heart or brain has not been too extensive, a moderate degree of improvement may be anticipated.

Laboratory studies reveal that there is a definite water lag during the day when the blood pressures are lower, than during the night when the patient is in a reclining position. A moderate polyuria at night may appear to compensate for the deficient excretion during the day. Excretion of dye is not influenced by low pressures. There has been no change in the sugar tolerance and also no change in the creatinine or serum sulphates. Patients with renal damage presented high values for urea immediately after operation, a condition which corrected itself by the time of dismissal four weeks after operation. The "cold pressor tests" following operation produce lower levels, with smaller variables, than they did before it. Readings of blood pressure in the various positions, such as the erect, reclining, and Trendelenburg position reveal definite hypopostural factors. The systolic blood pressure is capable of dropping to such an extent that, when the patient is standing in the upright position, syncope occurs; but, fortunately, it can be corrected by applying an abdominal supporter and adjusting the tension.

The effects of splanchnic resection and removal of the first and second lumbar ganglions are similar to those obtained by rhizotomy, except that the level of sweating and sebaceous loss and increase in surface temperature occurs at a lower level than that observed in rhizotomy. Since the level in this latter group corresponds to the first lumbar segment, this loss of sweat secretion and the vasomotor relaxation continues downward from this level to include the feet. Although it appears that the autonomic nervous system, and particularly the sympathetic, plays an important rôle, according to Cannon, in the regulation of the homeostasis of the human body, it is possible for human beings as well as experimental animals to live without its influence, in limited areas at least.

NOTE: For a detailed report of indications and surgical technic the reader is referred to an article by Dr. Adson entitled "Surgery in Its Relation to Hypertension," which appeared in *Surgery, Gynecology and Obstetrics*, for February, 15, 1936.

Discussion

DR. S. MARX WHITE.—Much consideration should be given to the conditions leading up to essential hyper-

tension and to its effects on the whole body. Viewing this subject from the medical standpoint, I would say that the most effective attack on the problems of management is to be made not late, when malignant hypertension is imminent or in its early stages—that phase which Dr. Adson has given such masterly attention—but in the early period when the blood pressure is labile and before fixation at the higher levels has been developed.

Management must begin with the first discovery of the fact that we are dealing with an individual with a hyper-reactive pressor mechanism, if we are to prevent or even delay the effects of such hyper reactivity on the cardiovascular system. We must be willing to give time to what one might call physiologic instruction to these patients. The best approach is to teach the patient what they can do for themselves and how to go about it. I would not refuse to tell them of their condition or of the state of their blood pressure as is often done, nor would I tell a patient to forget about his blood pressure. He can't forget. He can, however, I taught much about how to lower blood pressure by relaxation, and in my opinion the best way to do this is to show in his own case, by giving actual figures of his blood pressure, how effective relaxation really is. A demonstration is more effective than the discussion of a theory. Having made the demonstration, the necessity of shortening the periods when blood pressure is up and of lengthening the periods when it is down can be explained. This is of great importance in the medical approach, and I am convinced that more time and attention should be given by us to this phase of management.

What I like most about Dr. Adson's contribution is that adequate study is given in his cases to the complete study of the cases before operation is attempted and afterward as well. The operation is mutilating to the nervous system and no cases should be subjected to it unless such studies can be made, for we must know the benefits and the hazards at the earliest possible time and not spend many years during which a needless number of patients are subjected to it before final judgment as to its place in our armamentarium is made. The operation should not be widely attempted until, or unless, its benefits are known to far exceed its undesirable effects. It does not belong in the hands of every man capable of finding and removing a part of the sympathetic nervous system, but only in the hands of those trained in this field and so situated as to make thorough and decisive studies of every phase of the physiologic and pathologic basis before and long after the operation is performed.

DR. C. B. WRIGHT.—I appreciate very much the opportunity to hear this very interesting paper. Both the reasoning and results are worthy of careful consideration.

I also appreciate the invitation to discuss the paper but having had no opportunity to observe the results of this operative treatment I can add nothing to its discussion.

Judging from my own experience it would seem difficult to select the group which should be operated on. If only those patients should be operated on who are young, who are having headaches and eye changes and yet have no generally developed arteriosclerosis, it narrows it down to a comparatively small group. There are so many causes of headache and eye change is so often a late manifestation of hypertension we will undoubtedly have to develop a more accurate differentiation of cases and the patients who are to be operated upon certainly demand exceedingly careful clinical differentiation and the most expert surgery.

In the management of hypertension in general I have felt that in many cases of chronic hypertension undoubtedly anxiety and fear accentuate the condition. Every patient is an individual and should be treated

dividually. Minimizing to the patient the seriousness of his hypertension provided he will observe the necessary rules of health adds to his comfort and may help ease the pressure down. In general the hygiene of the nervous system, the reduction of weight to normal, without too radical change in the patients habits of life is advisable.

I have one patient who always talks about his "million dollar blood pressure test." Some ten years ago he was advised to give up an active business and rest as a cause of hypertension. He still has his hypertension and nothing to do but think about his blood pressure. He constantly regrets that he gave up his business which was the one thing he enjoyed and he is convinced that it cost him a million dollars to do it.

In conclusion, I again wish to thank the Surgical Society for the opportunity to hear this masterly presentation.

DR. ARCHIE H. BEARD.—So many people with non-essential hypertension are overweight. Has Dr. Adson any statistics on the basal metabolic rates in malignant hypertension? The few cases I have seen have never had a low metabolism.

DR. A. A. ZIEROLD.—There is little, if anything, that I can add by way of discussion. It would seem from the nature and extent of Dr. Adson's operation that some direct effect upon adrenal function might be expected. I would like to ask whether or not any quantitative studies of blood adrenalin have been made before and after operation.

DR. O. H. WANGENSTEEN.—This presentation of Dr. Adson has been most stimulating and indicates the physiologic trend that is becoming more apparent in surgery.

My associate, Dr. Peyton, does these operations at the University Hospital and I have little first-hand knowledge of the matter. A discussion of this sort well demonstrates that the borders of medicine and surgery are not fixed. We are continuously striving to cure by radical measures diseases which are not amenable to medical treatment; at the same time, search is always in progress for conservative agents which may serve as effectual substitutes for operative treatment.

If the results which Dr. Adson and his associates and others who have concerned themselves with the relief of hypertension by surgical means are borne out over long periods of observation, a great boon will be afforded a large number of people who are threatened to be afflicted with this disease. Certainly, a surgical approach to the problem of hypertension is fully warranted in that no specific or great promise can be held out to sufferers by medical management. The varieties of the disease are multiple and which cases should be subjected to surgery will have to be determined by the combined experience of internists and surgeons in clinics which essay to make critical observations concerning the efficacy of surgical measures of relief. As Dr. White has intimated, not every surgeon who can operate should do these operations. Un-

til the virtue of the method is definitely established, their performance should be concentrated in a few hands who make this field one of special interest.

In 1927, when Dr. George Eitel, of this Society, and I were at Berne in the Surgical Clinic of Professor deQuervain, we went to visit the clinics in Freiberg and had the opportunity of hearing Professor Aschoff discuss the pathological aspects of hypertension. He said that in early cases the blood vessels to five organs were essentially involved, viz., the kidneys, pancreas, liver, heart, and brain. He did not speak especially of a spastic affliction of those vessels. If in its early stages hypertension should prove to be largely a spastic nervous phenomenon, one can readily understand that denervation of the blood vessels to organs which offer an undue resistance to blood-inflow may obviate the evil consequences of the disease. There are a large number of questions which remain to be answered, before the exact mode of how this procedure works can be fully understood. Whereas, severance of the spinal cord in the lower cervical or upper dorsal region accompanying fractures of the spine does not materially affect the blood pressure, the decreases which are obtained in patients with hypertension with the employment of anesthesia or splanchnic operations suggests definitely that a spastic component is present. Whether the removal of this spastic element to the vessels of the abdominal viscera will satisfactorily interrupt similar alleged spasm in the coronary or cerebral vessels remains to be seen. The procedure obviously presents many significant physiological questions which only observation will adequately answer. If the operation proves to be very effectual in the treatment of hypertension, it will probably be found that it is more than a mechanical shunt into a large vascular bed whose inflow-resistance has been reduced.

It occurs to me that this type of medical meeting in which persons with like interests—surgeons and internists gather to discuss a controversial problem of mutual concern from their different points of view, is the gathering of the future. Harvey Cushing has well said that a surgeon must strive to become a physician in his field of interest and an internist is a better physician if he knows something of surgery.

DR. J. M. HAYES.—I have nothing to add to Dr. Adson's excellent discussion of this subject. I have, for several years, watched Dr. Adson's work in this line. I have been much interested in his progress in this unexplored field. There is no doubt but what he has added much to this field; surgery of the sympathetic nervous system. He has developed a technic in his approach to this field, which is not excelled in this or any other country.

It is interesting to see what he has done to these hypertension patients. We know they are offered but little help in any other way, so the path is clear. We hope this procedure gives them at least some hope of relief.

I join with the other men here tonight in congratulating him on his good work and the excellent presentation of the whole subject.

E. A. REGNIER, *Secretary.*

Meeting of May 1936

The regular monthly meeting of the Minneapolis Surgical Society was held in the lounge of the Hennepin County Medical Society rooms in May, 1936. The meeting was called to order by the president, Dr. F. A. Olson.

The following paper by Dr. J. M. Hayes comprised the scientific program:

HYPERTHYROIDISM IN CHILDREN

J. M. HAYES, M.D.

Minneapolis

As you all know hyperthyroidism in young children is not common. For that reason perhaps it is frequently not recognized readily when encountered. It is more common during the adolescent age than below the age

of ten. Frequently we see girls about the adolescent age of a nervous temperament, high strung and irritable in whom a diagnosis of hyperthyroidism is made. Closer study may prove that there is no hyperthyroidism present. Helmholtz called attention to the fact that these children usually have the true exophthalmic type of goiter and not a toxic adenoma.

The case I have to present this evening is especially interesting to me as it is the first patient of my own under the age of ten years, to have a basal metabolic rate of more than plus 50 per cent.

About twenty years ago Sattler reported, 184 toxic goiters in children under the age of seventeen years, in a total series of 3,477. The majority of these were close to the adolescent age.

Green and Moore of Richter's Clinic reported twenty-six cases. Only one of these twenty-six cases was below the age of ten years.

Dinsmore of the Cleveland Clinic reported forty-eight cases in 1932. Nine of these were below the age of ten years. Helmholtz of the Mayo Clinic reported thirty cases: four boys and twenty-six girls. This seems to be a fair representation of the ratio between boys and girls with this condition. Only a small number of these were under the age of ten years. He cites one case in which a typical hyperthyroidism existed in a boy at the age of three years.

White calls attention to a case of hyperthyroidism in a new born baby. The mother had hyperthyroidism.

A study of the literature seems to indicate that very few young children have a basal metabolic rate as high as plus 50 per cent. The average of Helmholtz's series was plus 34.6 per cent. Because of the uncertainty of the thyroid tissue in children, Lahey advises doing operating upon them in stages, first doing a partial lobectomy on one side, and then waiting six weeks or so.

Young people need thyroid tissue much more than older people. Frequently it is very uncertain just how much we should leave and how much we should take out. There is no doubt but what Lugol's solution is as effective in children as it is in adults.

Case Report

The girl I have to present tonight is nine years old. She had the typical symptoms of a hyperthyroidism that we find in an adult. The mother said these symptoms gradually came on for three years. The most marked symptoms with her were her inability to do work and to get along with other children, her parents or teachers. After playing outside for a short time she would come in all tired out and perspiring freely. Her work was so poor in school that the teacher advised her to quit at Christmas time, which she did. Even with plenty of rest and very little exertion her disposition seemed such that the other children could not get along with her. In spite of rest and small doses of Lugol's solution her symptoms seemed to increase.

This patient came to us last July and we gave her five minims of Lugol's solution, three times a day. The basal metabolic rate dropped from plus 51 per cent to plus 20 per cent in a short time.

This child had had tonsilitis every year up to last

year, when her tonsils were removed. She had weighed sixty-seven pounds in September and fifty-two pounds two months later, a loss of fifteen pounds. The mother said she felt her heart after slight exercise and seemed to be pounding hard. She also complained of pain in her legs. The appetite was poor in this case.

I operated upon her last August and, of course, was much concerned about how much tissue to remove. She lived far away and probably would not come back if the operation did not clear up her symptoms. Her symptoms were so marked I felt considerable tissue would have to be removed. I left about the same amount of tissue we leave in the average adult, between one-fifth to one-sixth the size of a normal lobe.

The result has been so good that I haven't had much trouble getting her back for observation. Today her basal metabolic rate is minus 2 per cent. Most of the time she is as you see her here now, a happy, smiling girl. Before operation she would seldom smile. The sudden change in her personality was very marked. The nurses and the mother remarked about it only a few days after the operation.

Dinsmore calls attention to the unsightly scars which frequently get in children but as you see we were fortunate here in getting a very fine scar.

This girl is now back in school doing satisfactory work and apparently is congenial with everyone with whom she comes in contact.

E. A. REGNIER, *Secretary.*

The Greater Evil

Why the medical profession as a whole should be opposed to socialized medicine is apparent to any layman who will take the trouble to study propaganda in its behalf. Dr. Terry M. Townsend, chairman of the committee on Medical Trends of the State Medical Society, presents some aspects calculated to cause concern to the layman on his own account. He has this to say:

If the public does not awake . . . they are likely to have foisted on them a system by which they will be subjected to pay roll tax for medical service. In addition the workmen will be required to contribute to the support of an army of clerks, supervisors, statisticians, "health study experts," snobs, arguers and propagandists. Their job will be to entrench themselves on the public pay roll, interfere with the doctor as much as possible to make themselves important, and spend a large part of their time keeping in right with the bureaucracy above them. America does not need and does not want a medical system run by non-medical people who could not tell the difference between an X-ray and an electrocardiogram.

Dr. Townsend adds that wherever compulsory health insurance is in operation vital statistics prove that the health of the people there is below the standard now existing in the United States. Laymen might not know about that, but the layman who has ever before come into contact with the squirts, whippersnappers and nosey parkers who invariably attach themselves to the bureaucracy understands the rest of it right enough. It is bad enough now for a poor man to go into some clinic to be handled by a sprout just out of medical college as if he were a parcel of none-too-welcome merchandise. What it would be under socialized medicine masquerading as compulsory health insurance is something upon which it is painful to reflect.

It is perhaps true that the health of the general public is no better than it should be. But it is by no means certain that public health under socialized medicine would be much better than it is. A greater evil, however, than indifferent health is the growth of the noxious spirit of bureaucracy.—*New York Sun*, Feb. 2, 1937.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

SYNOPSIS OF PEDIATRICS. John Zahorsky, A.B., M.D., F.A.C.P. Professor of Pediatrics and Director of Department of Pediatrics, St. Louis University School of Medicine, and Pediatrician-in-Chief St. Mary's Group of Hospitals, etc. 367 pages. Illus. Price, flexible binding, \$4.00. St. Louis: C. W. Mosby Co., 1937.

MEDICAL UROLOGY. Irvin S. Koll, B.S., M.D., F.A.C.S. Attending Urologist, Michael Reese Hospital. 431 pages. Illus. Price, cloth, \$5.00. St. Louis: C. V. Mosby Co., 1937.

SEXUAL POWER. Chester Tilton Stone, M.D. Clinical Assistant Surgeon in the Urological Department, Bellevue Hospital, etc. 172 pages. Price, cloth, \$1.50. New York: D. Appleton-Century Co., 1937.

PHYSIOLOGY IN HEALTH AND DISEASE. Carl J. Wiggers, M.D. Professor of Physiology in the School of Medicine, Western Reserve University, Cleveland, Ohio. 1124 pages. Illus. Price, cloth, \$9.00. Philadelphia: Lea & Febiger, 1937.

HANDBOOK OF ORTHOPÆDIC SURGERY. Alfred Rives Shands, Jr., B.A., M.D. Associate Professor of Surgery in Charge of Orthopædic Surgery, Duke University School of Medicine, etc. In collaboration with Richard Beverly Raney, B.A., M.D., Instructor in Orthopædic Surgery, Duke University. 593 pages. Illus. Price, cloth, \$5.00. St. Louis: C. V. Mosby Co., 1937.

SURGICAL PATHOLOGY OF THE THYROID GLAND. Arthur E. Hertzler, M.D., Surgeon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas, Professor of Surgery, University of Kansas. 298 pages. Illus. Cloth binding, \$5.00. Philadelphia: J. B. Lippincott Co., 1937.

THE THYROID AND ITS DISEASES. J. H. Means, M.D., Jackson Professor of Clinical Medicine, Harvard University, and Chief of Medical Services, Massachusetts General Hospital. 602 pages. Illus. Cloth binding, \$6.00. Philadelphia: J. B. Lippincott Co., 1937.

A MANUAL OF OPERATING ROOM PROCEDURES. Almira W. Hoppe, Science Instructor Jewish Hospital of St. Louis, and Lucile M. Halverson, Supervisor of Operating Rooms, University of Minnesota Hospitals. 239 pages including blank memorandum pages. Price, \$2.00, spiral binding. Minneapolis: University of Minnesota Press, 1937.

DIABETES. A Modern Manual. Anthony M. Sindoni, Jr., M.D. Chief of Diseases of Metabolism of St. Agnes Hospital, etc. Introduction by Morris Fishbein, M.D. 240 pages. Price, cloth, \$2.00. New York: Whittlesey House, McGraw-Hill Book Co., 1937.

AMERICAN MEDICINE: EXPERT TESTIMONY OUT OF COURT. 2 volumes. Price \$3.50. New York: The American Foundation, 1937.

Anyone desiring to learn what medical men throughout the country think about medical economic problems can obtain this information in this work just published.

The American Foundation was established in 1924 by the late Edward Bok and devoted its activities to governmental problems until this present task was begun some eighteen months ago. Letters were sent out to 5,000 medical men, general practitioners, surgeons, specialists, educators, hospital administrators and others, and some 1300 pages of the two-volume report are devoted to the opinions of the 2100 persons who answered the various queries. The compilers have wisely made no attempt to draw conclusions from the opinions submitted. Who could? The subject is as controversial as the whole subject of economics itself.

After a perusal of these two volumes one derives certain impressions provided he doesn't become entirely confused from the many, oftentimes conflicting opinions expressed. The main problem is how to provide for good medical care for everybody in the country. The answer involves the training of good doctors and a wage scale which will permit all but the indigent to pay for medical care which in a certain percentage of cases is admittedly expensive. Human as well as economic factors enter the picture—shortcomings in members of the profession and the laity alike. Failure to save or budget for medical care, foolish waste of money on cosmetics, liquor, tobacco and amusements, patent medicines, medical cults—all play a part.

It seems pretty well agreed that different parts of the country have different medical problems which must be met locally and not by national provision; that state medicine will result in lowering of the quality of medical service and further enormous increase in taxation; that the present high taxation of wealth will affect the welfare of all medical institutions dependent on gifts from the wealthy; that the solution of medical problems is likely to be one of evolution with the state probably assisting more than at present in providing laboratory facilities and medication.

These volumes contain a wealth of material of interest to medical men in their attempt to offer constructive recommendations to meet present-day medical problems. It remains to be seen whether the survey will prove to be of any more practical value than the report of the Committee on the Cost of Medical Care.

C. B. D.

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MINNESOTA STATE MEDICAL ASSOCIATION

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Annual meeting, last Monday in January
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utzer, J. A.....Mankato
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Faribault and Martin Counties

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Annual meeting, first Thursday in November
Number of Members: 33

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Secretary
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Bailey, H. B.....Fairmount
arr, W. H.....Wells
lanchard, H. G.....Fairmount
oyens, Herbert.....Welcome
chambers, W. C.....Blue Earth
cooper, M. D.....Winnebago
emo, P. W.....Wells

Folta, John.....Ceylon
Gardner, V. H.....Fairmount
Heimark, J. J.....Fairmount
Henderson, A. J.....Kiester
Holm, P. F.....Wells
Hunt, R. C.....Fairmount
Hunte, A. F.....Bylas, Arizona
Jacobs, A. C.....Elmore
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Johnson, H. P.....Fairmount
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Zemke, E. E.....Fairmount

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Chippewa, Lac Qui Parle and Yellow Medicine Counties

Regular meetings, every second Thursday in Fall and Spring
Annual meeting, March
Number of Members: 23

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acon, R. S.....Montevideo
bergh, L. N.....Montevideo
urns, F. M.....Milan

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Smith, L. G.....Montevideo
Tangen, G. M.....Canby
Westby, Magnus.....Madison
Westby, Nels.....Madison

CLAY-BECKER COUNTY MEDICAL SOCIETY

Regular meetings, three annually
Annual meeting, December
Number of Members: 22

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Secretary
Flancher, L. H.....Lake Park

Aborn, W. H.....Hawley
Berghheim, M. C.....Hawley
Carman, J. E.....Detroit Lakes
Duncan, J. W.....Moorhead

Ellingson, A. R.....Detroit Lakes
Flancher, L. H.....Lake Park
Gosslee, G. L.....Moorhead
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Regular meetings on call
Annual meeting December
Number of members: (Not yet reported)

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EAST CENTRAL MINNESOTA MEDICAL SOCIETY

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Annual meeting, November
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Wahlberg, E. W. Isl

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Regular meetings, Quarterly
Annual meeting, December
Number of Members: 21

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Regular meetings, none
Annual meeting, December
Number of Members: 22

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Regular meetings, first Monday each month excepting June, July, August and September
Annual meeting, October
Number of Members: 592

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Aling, C. A. Minneapolis
Aling, C. P. Minneapolis
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Cutts, George. Minneapolis
Cutts, R. E. Minneapolis
Dady, E. E. Minneapolis

*Deceased.

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

hl, E. O.	Minneapolis	Hart, V. L.	Minneapolis	Lee, H. M.	Minneapolis
hl, J. A.	Minneapolis	Hastings, D. R.	Minneapolis	Leland, H. R.	Minneapolis
niel, D. H.	Minneapolis	Haugen, J. A.	Minneapolis	Lenz, O. A.	Minneapolis
niel, L. M.	Minneapolis	Haverfield, A. R.	Minneapolis	Leonard, L. J.	Minneapolis
rt, L. O.	Minneapolis	Hawkinson, R. P.	Robbinsdale	Leonard, Sam.	Minneapolis
vis, J. C.	Minneapolis	Hayes, J. M.	Minneapolis	Levine, N. M.	Minneapolis
Plaine, C. W.	Minneapolis	Head, D. P.	Minneapolis	Lillehei, E. J.	Robbinsdale
vereaux, T. J.	Wayzata	Head, G. D.	Minneapolis	Lind, C. J.	Minneapolis
ehl, H. S.	Minneapolis	Hedback, A. E.	Minneapolis	Lindquist, R. H.	Minneapolis
essner, H. D.	Minneapolis	Heim, R. R.	Minneapolis	Linner, H. P.	Minneapolis
oring, R. E.	Minneapolis	Helk, H. H.	Minneapolis	Linton, W. B.	Minneapolis
orge, R. I.	Minneapolis	Hendricks, E. J.	Minneapolis	Lippman, E. S.	Minneapolis
ornblaser, H. B.	Minneapolis	Hendrickson, J. F.	Minneapolis	Lipschultz, Oscar.	Minneapolis
orsey, G. C.	Minneapolis	Henrikson, E. C.	Minneapolis	Litman, A. B.	Minneapolis
oxey, G. L.	Minneapolis	Henry, C. E.	Minneapolis	Litzenberg, J. C.	Minneapolis
yle, L. O.	Minneapolis	Henry, M. O.	Minneapolis	Logefeil, R. C.	Minneapolis
ake, C. R.	Minneapolis	Herbolsheimer, A. J.	Minneapolis	Long, Jesse.	Minneapolis
hl, H. E.	Hopkins	Herbst, R. F.	Minneapolis	Loomis, E. A.	Minneapolis
uff, E. R.	Minneapolis	Herman, A. L.	Minneapolis	Lundblad, R. A.	Minneapolis
kelow, D. A.	Minneapolis	Hiebert, J. P.	Minneapolis	Lundgren, A. C.	Minneapolis
mas, A. G.	Minneapolis	Higgins, J. H.	Minneapolis	Lundquist, E. F.	Minneapolis
inlap, E. H.	Minneapolis	Hill, E. J.	Minneapolis	Lynch, M. J.	Minneapolis
nn, G. R.	Minneapolis	Hirschfeld, A. D.	Minneapolis	Lyon, E. P.	Minneapolis
uryea, W. M.	Minneapolis	Hirshfield, F. R.	Minneapolis	Lysne, Henry.	Minneapolis
utton, C. E.	Minneapolis	Hoaglund, A. W.	Minneapolis	MacDonald, A. E.	Minneapolis
vorak, B. A.	Minneapolis	Hobbs, C. A.	Minneapolis	MacDonald, D. A.	Minneapolis
wan, P. F.	Minneapolis	Hodge, S. V.	Minneapolis	MacDonald, I. C.	Minneapolis
worsky, S. D.	Minneapolis	Hoffert, H. E.	Minneapolis	Mach, F. B.	Minneapolis
wrenberg, C. J.	Minneapolis	Holl, P. M.	Minneapolis	Macnie, J. S.	Minneapolis
rich, S. P.	Minneapolis	Holt, W. B.	Minneapolis	Maland, C. O.	Minneapolis
ch, Matthew.	Minneapolis	Houkom, Bjarne	Minneapolis	Marclew, W. J.	Minneapolis
ler, John.	St. Bonifacius	Hovland, M. L.	Minneapolis	Mariette, E. S.	Oak Terrace
senstadt, D. H.	Minneapolis	Howard, W. H.	Minneapolis	Mark, D. B.	Minneapolis
tel, G. D.	Minneapolis	Huenekens, E. J.	Minneapolis	Martinson, C. J.	Wayzata
lison, D. E.	Minneapolis	Hultkrans, R. E.	Minneapolis	Matchan, G. R.	Minneapolis
gstrand, O. J.	Minneapolis	Hurd, Annah.	Minneapolis	Matthews, Justus.	Minneapolis
dmann, C. A.	Minneapolis	Hutchinson, C. J.	Minneapolis	Mattill, P. M.	Oak Terrace
rickson, R. F.	Minneapolis	Hymes, Charles.	Minneapolis	Mattson, Hamlin.	Minneapolis
ricson, R. M.	Minneapolis	Hynes, J. E.	Minneapolis	Maxeiner, S. R.	Minneapolis
vans, E. T.	Minneapolis	Irvine, H. G.	Minneapolis	May, W. H.	Minneapolis
vans, R. D.	Minneapolis	Jackson, C. M.	Minneapolis	McCann, E. J.	Minneapolis
hr, G. E.	Minneapolis	Jacobs, L. G. Jr.	Madison, Wis.	McCarthy, Donald.	Minneapolis
ansler, J. A.	Minneapolis	Jennings, F. L.	Oak Terrace	McCartney, J. S.	Minneapolis
eney, W. M.	Minneapolis	Jennings, M. H.	Minneapolis	McDaniel, Orianna.	Minneapolis
enger, E. P. K.	Oak Terrace	Jensen, Harry.	Minneapolis	McFarland, A. H.	Minneapolis
etterly, Warren.	Minneapolis	Jensen, M. J.	Minneapolis	McGandy, R. F.	Minneapolis
ink, L. W.	Minneapolis	Johnson, A. B.	Minneapolis	McGeary, G. E.	Minneapolis
ink, W. H.	Minneapolis	Johnson, A. E.	Minneapolis	McGregor, Catherine.	Minneapolis
itzgerald, D. F.	Minneapolis	Johnson, E. W.	Minneapolis	McInerny, Maurice.	Minneapolis
ieldstad, C. A.	Minneapolis	Johnson, H. A.	Minneapolis	McIntyre, George.	Minneapolis
leming, A. S.	Minneapolis	Johnson, J. A.	Minneapolis	McKenzie, C. H.	Minneapolis
ord, W. H.	Minneapolis	Johnson, Julius.	Minneapolis	McKinlay, C. A.	Minneapolis
oster, W. K.	Minneapolis	Johnson, N. A.	Minneapolis	McKinley, J. C.	Minneapolis
owler, L. H.	Minneapolis	Johnson, Norman.	Minneapolis	McKinney, F. S.	Minneapolis
edericks, G. M.	Minneapolis	Johnson, N. T.	Minneapolis	McPheeters, H. O.	Minneapolis
riedell, Aaron.	Minneapolis	Johnson, R. A.	Minneapolis	McQuarrie, Irvine.	Minneapolis
ritzell, K. E.	Minneapolis	Johnson, S. M.	Minneapolis	Mee, P. H.	Osseo
roehlich, H. W.	Minneapolis	Johnson, Y. T.	Minneapolis	Meland, E. L.	Minneapolis
unk, V. K.	Oak Terrace	Johnston, L. F.	Minneapolis	Merkert, C. E.	Minneapolis
ammell, J. H.	Minneapolis	Jones, G. M.	Minneapolis	Merkert, G. L.	Minneapolis
ardner, E. O.	Minneapolis	Jones, H. W.	Minneapolis	Merrill, Elisabeth.	Minneapolis
iere, E. O.	Minneapolis	Jones, W. R.	Minneapolis	Meyer, E. L.	Minneapolis
iere, J. C.	Minneapolis	Joseph, Alexander.	Minneapolis	Michael, J. C.	Minneapolis
iere, R. W.	Minneapolis	Kalin, O. T.	Minneapolis	Michel, H. H.	Minneapolis
ieessler, P. W.	Minneapolis	Kelby, G. M.	Minneapolis	Michelson, H. E.	Minneapolis
illes, F. L.	Minneapolis	Kennedy, C. C.	Minneapolis	Miller, H. E.	Minneapolis
ingold, B. A.	Minneapolis	Kennedy, J. F.	Minneapolis	Miller, J. C.	Minneapolis
insberg, Harry.	Minneapolis	Kerkhof, A. C.	Minneapolis	Milton, J. S.	Minneapolis
irvin, R. B.	Minneapolis	Kertesz, G.	Minneapolis	Mitchell, E. C.	Mound
olberg, M. L.	Minneapolis	Kibbe, O. A.	Minneapolis	Moe, J. H.	Minneapolis
oldman, T. I.	Minneapolis	King, E. A.	Minneapolis	Moir, W. W.	Minneapolis
ood, H. D.	Minneapolis	King, H. T.	Minneapolis	Moorhead, M. B.	Minneapolis
ratzek, F. R.	Minneapolis	Kinsella, T. J.	Minneapolis	Moren, Edward.	Minneapolis
rave, Floyd.	Minneapolis	Kistler, A. J.	Minneapolis	Moriarty, C. R.	Minneapolis
ray, R. C.	Minneapolis	Kistler, C. M.	Minneapolis	Morrison, A. W.	Minneapolis
Green, E. K.	Minneapolis	Knapp, M. E.	Minneapolis	Morse, R. W.	Minneapolis
Grimes, B. P.	Minneapolis	Knight, R. R.	Minneapolis	Morton, H. McI.	Vincetown, N. J.
Grimes, Marian.	Minneapolis	Knight, R. T.	Minneapolis	Murphy, I. J.	Minneapolis
Gronvall, P. R.	Minneapolis	Koepeke, G. M.	Minneapolis	Myers, J. A.	Minneapolis
Gunderson, N. A.	Minneapolis	Koller, H. M.	Minneapolis	Neal, J. M.	Minneapolis
Gustason, H. T.	Minneapolis	Koller, L. R.	Minneapolis	Neary, R. P.	Minneapolis
Haggard, G. D.	Minneapolis	Kucera, F. J.	Hopkins	Nelson, H. S.	Minneapolis
Hall, J. M.	Minneapolis	Kucera, W. J.	Minneapolis	Nelson, Harvey.	Minneapolis
Hallberg, C. A.	Minneapolis	Lajoie, J. M.	Minneapolis	Nelson, O. E.	Minneapolis
Hamel, A. L.	Minneapolis	Lamont, J. G.	Minneapolis	Newhart, Horace.	Minneapolis
Hamilton, A. S.	Minneapolis	Lang, L. A.	Minneapolis	Noonan, D. F.	Minneapolis
Hamilin, G. B.	Minneapolis	Lapierre, A. P.	Minneapolis	Nordin, G. T.	Minneapolis
Hammond, A. J.	Minneapolis	Lapierre, C. A.	Minneapolis	Nordland, Martin.	Minneapolis
Hannah, H. B.	Minneapolis	Lapierre, J. T.	Minneapolis	Noth, H. W.	Minneapolis
Hansen, C. O.	Minneapolis	Larsen, F. W.	Minneapolis	Nystrom, Ruth.	Minneapolis
Hansen, E. W.	Minneapolis	Larson, C. M.	Minneapolis	Oberg, C. M.	Minneapolis
Hansen, O. S.	Minneapolis	Larson, L. M.	Minneapolis	O'Brien, W. A.	Minneapolis
Hanson, H. J.	Minneapolis	Larson, P. N.	Oak Terrace	O'Donnell, J. E.	Minneapolis
Hanson, H. V.	Minneapolis	La Vake, R. T.	Minneapolis	Olson, F. A.	Minneapolis
Hanson, W. A.	Minneapolis	Laymon, C. W.	Minneapolis	Olson, O. A.	Minneapolis
Harrington, C. D.	Minneapolis	Lazar, H. L.	Minneapolis	Olson, R. G.	Minneapolis
Harrington, F. E.	Minneapolis	Leavitt, H. H.	Minneapolis	Oppen, E. G.	Minneapolis
		Lebowski, J. A.	Minneapolis	Owre, Oscar.	Minneapolis
				Parks, A. H.	Minneapolis
				Patterson, W. E.	Minneapolis

*Deceased.

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

Paulsen, E. L.....Minneapolis
 Pearce, N. O.....Minneapolis
 Pennington, Reuben.....Minneapolis
 Peppard, T. A.....Minneapolis
 Perry, R. St. J.....Minneapolis
 Petersen, J. R.....Minneapolis
 Petersen, Thorvald.....Minneapolis
 Peterson, Henry.....Minneapolis
 Peterson, H. W.....Minneapolis
 Peterson, N. P.....Minneapolis
 Peterson, O. H.....Minneapolis
 Peterson, P. E.....Minneapolis
 Peterson, W. C.....Minneapolis
 Pettit, L. J.....Minneapolis
 Pettit, C. K.....Oak Terrace
 Pettit, C. W.....Minneapolis
 Peyton, W. T.....Minneapolis
 Pfunder, M. C.....Minneapolis
 Phelps, K. A.....Minneapolis
 Platon, E. S.....Minneapolis
 Pollard, D. W.....Minneapolis
 Pollock, D. K.....Minneapolis
 Polzak, J. A.....Minneapolis
 Poppe, F. H.....Minneapolis
 Pratt, F. J.....Minneapolis
 Pratt, J. A.....Minneapolis
 Preine, I. A.....Minneapolis
 Prim, J. A.....Minneapolis
 Proshek, C. E.....Minneapolis
 Quinby, T. F.....Minneapolis
 Quist, H. W.....Minneapolis
 Rasmussen, R. C.....St. Paul
 Reed, C. A.....Minneapolis
 Regnier, E. A.....Minneapolis
 Rewbridge, A. G.....Minneapolis
 Reynolds, J. S.....Minneapolis
 Rice, C. O.....Minneapolis
 Richardson, F. S.....Minneapolis
 Richdorf, L. F.....Minneapolis
 Rieke, W. W.....Wayzata
 Rigler, L. G.....Minneapolis
 Rishmiller, J. H.....Minneapolis
 Rizer, R. I.....Minneapolis
 Roan, C. M.....Minneapolis
 Robb, E. F.....Minneapolis
 Roberts, S. W.....Minneapolis
 Roberts, T. S.....Minneapolis
 Roberts, W. B.....Minneapolis
 Robitshek, E. C.....Minneapolis
 Rochford, W. E.....Minneapolis
 Rodda, F. C.....Minneapolis
 Rodgers, C. L.....Minneapolis
 Rosen, Samuel.....Minneapolis
 Rosenwald, R. M.....Minneapolis
 Rucker, W. H.....Minneapolis
 Rud, N. E.....Minneapolis
 Rudell, G. L.....Minneapolis
 Rupp, Alice.....Minneapolis
 Russeth, A. N.....Minneapolis
 Rusten, E. M.....Minneapolis
 Sadler, W. P.....Minneapolis
 St. Cyr, K. J.....Osseo

Saliterman, B. I.....Minneapolis
 Salt, C. G.....Minneapolis
 Samuelson, Samuel.....Minneapolis
 Sawatzky, W. A.....Minneapolis
 Schaaf, F. H. K.....Minneapolis
 Schaefer, W. G.....Minneapolis
 Scheldrup, N. H.....Minneapolis
 Scherer, L. R.....Minneapolis
 Schmidt, G. F.....Minneapolis
 Schmitt, A. F.....Minneapolis
 Schmitt, S. C.....Minneapolis
 Schneider, J. P.....Minneapolis
 Schottler, M. E.....Minneapolis
 Schultz, P. J.....Minneapolis
 Schussler, O. F.....Minneapolis
 Schwartz, V. J.....Minneapolis
 Schwyzer, Gustav.....Minneapolis
 Scott, F. H.....Minneapolis
 Scott, H. G.....Minneapolis
 Seashore, Gilbert.....Minneapolis
 Seham, Max.....Minneapolis
 Seifert, M. H.....Excelsior
 Sellese, I. F.....Minneapolis
 Shaperman, E. P.....Minneapolis
 Shapiro, M. J.....Minneapolis
 Sharp, D. V.....Minneapolis
 Siegmann, W. C.....Minneapolis
 Silver, J. D.....Minneapolis
 Simons, J. H.....Minneapolis
 Simpson, E. D.....Minneapolis
 Siperstein, D. M.....Minneapolis
 Sivertsen, Andrew.....Hollywood, Calif.
 Sivertsen, Ivar.....Minneapolis
 Skjold, A. C.....Minneapolis
 Sloan, Julius.....Minneapolis
 Sloan, L. N.....Minneapolis
 Smisek, F. M.....Minneapolis
 Smith, A. E.....Minneapolis
 Smith, A. M.....Minneapolis
 Smith, H. R.....Minneapolis
 Smith, N. M.....Minneapolis
 Soderlind, R. T.....Minneapolis
 Solhaug, S. B.....Minneapolis
 Spano, J. P.....Minneapolis
 Sperling, Louis.....Minneapolis
 Spratt, C. N.....Minneapolis
 Stelter, L. A.....Minneapolis
 Stenstrom, A. T.....Minneapolis
 Stewart, C. A.....Minneapolis
 Stewart, R. I.....Minneapolis
 Stomel, Joseph.....Minneapolis
 Strachauer, A. C.....Minneapolis
 Strout, E. S.....Minneapolis
 Strout, G. E.....Minneapolis
 Sturre, J. R.....Minneapolis
 Sullivan, R. M.....Minneapolis
 Sundt, Mathias.....Minneapolis
 Swanson, Cephas.....Minneapolis
 Swanson, R. E.....Minneapolis
 Sweetser, H. B., Jr.....Minneapolis
 Sweetser, H. B., Sr.....Minneapolis
 Sweetser, T. H.....Minneapolis

Sweitzer, S. E.....Minneapolis
 Swendseen, C. G.....Minneapolis
 Taylor, J. H.....Minneapolis
 Ternstrom, O. H.....Minneapolis
 Thomas, G. E.....Minneapolis
 Thomas, G. H.....Minneapolis
 Thomas, G. J.....Minneapolis
 Thompson, H. H.....Minneapolis
 Tingdale, A. C.....Wayzata
 Trueman, H. S.....Minneapolis
 Tunstead, H. J.....Minneapolis
 Turnachiff, D. D.....Minneapolis
 Tyrell, C. C.....Minneapolis
 Ude, W. H.....Minneapolis
 Ulrich, H. L.....Minneapolis
 Undine, C. A.....Minneapolis
 Vik, A. E.....Minneapolis
 Walch, A. E.....Minneapolis
 Wahlquist, H. F.....Minneapolis
 Waldron, C. W.....Minneapolis
 Wall, C. R.....Minneapolis
 Wangenstein, O. H.....Minneapolis
 Wanous, E. Z.....Minneapolis
 Ward, A. W.....Minneapolis
 Ward, P. A.....Minneapolis
 Warham, T. T.....Minneapolis
 Watson, J. A.....Minneapolis
 Webb, R. C.....Minneapolis
 Weisman, S. A.....Minneapolis
 Westman, R. T.....Minneapolis
 Wethall, A. G.....Minneapolis
 Wetherby, Macnider.....Minneapolis
 Weum, T. W.....Minneapolis
 White, A. A.....Minneapolis
 White, S. M.....Minneapolis
 White, W. D.....Minneapolis
 Whitesell, L. A.....Minneapolis
 Widen, W. F.....Minneapolis
 Wiese, H. F. B.....Minneapolis
 Wilcox, A. E.....Minneapolis
 Wilder, R. L.....Minneapolis
 Wilken, P. A.....Minneapolis
 Willcutt, C. E.....Minneapolis
 Williams, Robert.....Minneapolis
 Winer, L. H.....Minneapolis
 Winther, Nora.....Minneapolis
 Witham, C. A.....Minneapolis
 Wittich, F. W.....Minneapolis
 Wohlrabe, A. A.....Minneapolis
 Wohlrabe, C. F.....Minneapolis
 Woodworth, Elizabeth.....Minneapolis
 Wright, C. B.....Minneapolis
 Wright, C. D.....Minneapolis
 Wright, F. R.....Minneapolis
 Wright, S. G.....Minneapolis
 Wyatt, O. S.....Minneapolis
 Wynne, H. M. N.....Minneapolis
 Ylvisaker, R. S.....Minneapolis
 Yoerg, O. W.....Minneapolis
 Zaworski, E. A.....Minneapolis
 Zierold, A. A.....Minneapolis
 Ziskin, Thomas.....Minneapolis

KANDIYOHI-SWIFT-MEEKER COUNTY MEDICAL SOCIETY

Regular meetings, second Wednesday of month
 Annual meeting, December
 Number of Members: 33

President
 Hutchinson, Henry.....Willmar
 Secretary
 Scofield, C. L.....Benson
 Anderson, L. W.....Atwater
 Anderson, R. E.....Willmar
 Arnson, J. M.....Benson
 Branton, A. F.....Willmar
 Branton, B. J.....Willmar
 Brigham, Frank.....Watkins
 Daignault, Oscar.....Benson

Danielson, K. A.....Litchfield
 Danielson, Lennox.....Litchfield
 Dowswell, W. J.....Kerkhoven
 Dulude, S. S.....Dassel
 Edwards, G. C.....Grove City
 Fiksdal, M. J.....Willmar
 Fredrickson, A. C.....Lake Lillian
 Fredrickson, G. U. Y.....Lake Lillian
 Frisch, F. P.....Willmar
 Frost, E. H.....Willmar
 Giere, S. W.....Benson
 Hedlund, C. J.....Atwater
 Hodapp, R. J.....Willmar

Hutchinson, Henry.....Willmar
 Jacobs, D. L.....Willmar
 Jacobs, J. C.....Willmar
 Jensen, H. H.....Atwater
 Johnson, Hans.....Kerkhoven
 Kaufman, E. J.....Appleton
 Kaufman, W. C.....Appleton
 Macklin, W. E.....Litchfield
 Noble, J. L.....St. Paul
 Petersen, M. C.....Willmar
 Scofield, C. L.....Benson
 Telford, V. J.....Litchfield
 Wilmot, H. E.....Litchfield

LYON-LINCOLN COUNTY MEDICAL SOCIETY

Regular meetings, first Tuesday of month
 Annual meeting, November
 Number of Members: 22

President
 Schmidt, P. G.....Cottonwood
 Secretary
 Workman, W. G.....Tracy
 Bossingham, O. N.....Lake Benton
 Ford, B. C.....Marshall
 Germe, Charles.....Balaton
 Golden, C. M.....Tyler

Gray, F. D.....Marshall
 Happe, L. J.....Marshall
 Helferty, J. K.....Tracy
 Hermanson, P. E.....Hendricks
 Hoidale, A. D.....Tracy
 Jacquot, G. L.....Marshall
 Johnson, P. C.....Tyler
 Monson, L. J.....Hendricks
 Persons, C. E.....Marshall

Purves, G. H.....Russell
 Robertson, J. B.....Minneapolis
 Sanderson, E. T.....Minnetonka
 Schmidt, P. G.....Cottonwood
 Thordarson, Theodore.....Minnetonka
 Vadheim, A. L.....Tyler
 Valentine, W. H.....Tracy
 Workman, W. G.....Tracy
 Yaeger, W. W.....Ivanhoe

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

MCLEOD COUNTY MEDICAL SOCIETY

Regular meetings, Quarterly
Annual meeting, December
Number of Members: 17

President
H. C. Glencoe
Secretary
W. G. Hutchinson
President, J. B. Lester Prairie
H. A. Hutchinson

Jensen, A. M. Brownton
Holm, H. H. Glencoe
Goss, H. C. Glencoe
Klima, W. W. Stewart
Langhoff, A. H. Glencoe
Lippmann, E. W. Hutchinson
McMahon, M. J. Green Isle
Ninneman, N. N. Silver Lake

Sahr, W. G. Hutchinson
Schmidt, W. R. Glencoe
Scholpp, O. W. Hutchinson
Sheppard, Fred. Hutchinson
Sheppard, P. E. Hutchinson
Tinker, C. W. Stewart
Trutna, T. J. Silver Lake

MOWER COUNTY MEDICAL SOCIETY

Regular meetings, last Thursday each month except June, July and August
Annual meeting, last Thursday in November
Number of Members: 25

President
P. C. Austin
Secretary
P. A. Austin
A. W. Austin
C. C. Austin
U. S. Austin
B. J. Austin
L. G. Austin

Grise, W. B. Austin
Havens, J. G. W. Austin
Hegge, O. H. Austin
Hegge, R. S. Austin
Henslin, A. E. Le Roy
Hertel, G. E. Austin
Johnson, O. J. Lyle
Leck, P. C. Austin
Lommen, P. A. Austin
McKenna, J. K. Austin

Melzer, G. R. Lyle
Mitchell, R. S. Grand Meadow
Morrow, J. J. Austin
Morse, M. P. Le Roy
Nettrour, W. S. Austin
Robertson, P. A. Austin
Rosenthal, F. H. Grand Meadow
Schottler, G. J. Dexter
Sheedy, C. L. Austin
Thomson, J. M. Brownsdale

NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

Regular meetings, first Tuesday, April, September, and December
Annual meeting, first Tuesday in December
Number of Members: 16

President
erschbaumer, Louisa St. Peter
Secretary
enander, M. E. St. Peter
itkens, H. B. Le Center
ovell, W. W. St. Peter

Curtis, R. A. Le Center
Ericson, Swan. Le Sueur
Freeman, G. H. St. Peter
Gully, R. J. St. Peter
Hiniker, P. J. Le Sueur
Holtan, Theodore Waterville
Kerschbaumer, Louisa St. Peter

Kolars, J. J. Le Center
Lenander, M. E. St. Peter
Nilson, H. J. North Mankato
Sonnese, N. N. Le Sueur
Strathern, F. P. St. Peter
Traxler, F. J. Henderson
Wolner, O. H. St. Peter

OLMSTED-HOUSTON-FILLMORE-DODGE COUNTY MEDICAL SOCIETY

Regular meetings, first Wednesday every odd month
Annual meeting in November
Number of Members: 348

President
ixon, C. F. Rochester
Secretary
iper, M. C. Rochester
dams, R. C. Rochester
dson, A. W. Rochester
ffeldt, D. E. Kasson
len, E. V. Rochester
lvarez, W. C. Rochester
mberg, Samuel Rochester
nderson, C. M. Rochester
nderson, M. J. Rochester
nnis, J. W. Rochester
rcher, G. F., Jr. Rochester
rmstrong, T. D. Rochester
rny, F. P. Preston
utry, D. H. Rochester
aggenstoss, A. H. Rochester
alley, R. J. Rochester
air, H. L. Rochester
aker, C. P. Rochester
aker, G. S. Rochester
aker, H. R. Hayfield
aker, R. L. Hayfield
aker, T. W. Rochester
alfour, D. C. Rochester
annick, E. G. Rochester
argen, J. A. Rochester
arker, N. W. Rochester
arnes, A. R. Rochester
atts, Martin, Jr. Rochester
edard, R. E. Rochester
ehrend, Albert Rochester
eiswanger, R. H. Wykoff
elote, G. B. Caledonia
enedict, W. L. Rochester
enson, K. W. Rochester
erkman, D. M. Rochester
erkman, J. M. Rochester
etlach, C. J. Rochester
igelow, C. E. Dodge Center
inger, M. W. Rochester
irge, H. L. Rochester
lake, T. W. Rochester
lum, B. B. Rochester

Boothby, W. M. Rochester
Bowling, H. H. Rochester
Braasch, W. F. Rochester
Breck, L. W. Rochester
Brink, J. R. Rochester
Broders, A. C. Rochester
Brown, A. E. Rochester
Brown, P. W. Rochester
Brunsting, H. A. Rochester
Brunsting, L. A. Rochester
Buchstein, H. F. Rochester
Buchtel, H. A. Rochester
Buie, L. A. Rochester
Bussey, C. D. Rochester
Butsch, W. L. Rochester
Butt, H. R. Rochester
Cabot, Hugh Rochester
Camp, J. D. Rochester
Campbell, S. J. Rochester
Carlson, L. A. Rochester
Carmichael, F. A., Jr. Rochester
Chew, E. M. Rochester
Childrey, Edgar, Jr. Rochester
Clagett, O. T. Rochester
Clark, L. W. Spring Valley
Clark, R. L., Jr. Rochester
Cleveland, W. H. Rochester
Clifton, T. A. Chatfield
Coffey, R. J. Rochester
Comfort, M. W. Rochester
Conner, H. M. Rochester
Cook, E. N. Rochester
Corwin, W. C. Rochester
Counseller, V. S. Rochester
Cragg, R. W. Rochester
Craig, W. McK. Rochester
Crenshaw, J. L. Rochester
Crewe, J. E. Rochester
Cusick, P. Rochester
Cutler, H. L. Rochester
Davenport, L. H. Rochester
Davis, A. C. Rochester
Davis, I. G. Rushford
Day, L. A. Rochester
Dearing, W. H., Jr. Rochester
Deeds, C. D. Rochester
Desjardins, A. U. Rochester

Dietrich, F. S., Jr. Rochester
Dixon, C. F. Rochester
Dolder, F. C. Eyota
Drake, F. A. Lanesboro
Drips, D. G. Rochester
Dry, T. J. Rochester
Eaton, L. McK. Rochester
Ecker, A. D. Rochester
Elkins, E. C. Rochester
Emmett, J. L. Rochester
Erich, J. B. Rochester
Erickson, C. W. Rochester
Eusterman, G. B. Rochester
Evarts, A. B. Rochester
Faber, J. E. Rochester
Fairchild, R. D. Rochester
Famighietti, E. V. Rochester
Farthing, J. W. Rochester
Fatherree, T. J., Jr. Rochester
Fawcett, C. E. Stewartville
Figi, F. A. Rochester
Foley, M. P. Rochester
Foster, F. P. Rochester
Fricke, R. E. Rochester
Furey, E. D. Rochester
Gaarde, F. W. Rochester
Garrett, L. M. Rochester
Ghormley, R. K. Rochester
Gibson, J. K. Tiltonville, Ohio
Gibson, W. R. Rochester
Giffin, H. Z. Rochester
Gillespie, D. L. Rochester
Gober, O. B. Rochester
Goldstein, Moe Rochester
Good, C. A., Jr. Rochester
Graham, R. W. Rochester
Gray, H. K. Rochester
Griffin, A. M. Rochester
Groff, J. E. Rochester
Guernsey, C. M. Rochester
Gunderson, H. J. Rochester
Gurney, C. E. Rochester
Habein, H. C. Rochester
Haines, D. J., Jr. Rochester
Haines, S. F. Rochester
Hall, B. E. Rochester
Hallenheck, D. F. Rochester

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

Harrington, S. W.....	Rochester	MacKenzie, W. C.....	Rochester	Rucker, C. W.....	Rochester
Hartman, H. R.....	Rochester	MacLean, A. R.....	Rochester	Ryneerson, E. H.....	Rochester
Havens, F. Z.....	Rochester	Magath, T. B.....	Rochester	Sanford, A. H.....	Rochester
Heck, F. J.....	Rochester	Magiera, E. A.....	Rochester	Sanford, H. S.....	Rochester
Heffner, R. R.....	Rochester	Maksim, George, Jr.....	Rochester	Saunders, T. S., Jr.....	Rochester
Heilman, F. R.....	Rochester	Malerich, J. A.....	Caledonia	Sawyer, M. H.....	Rochester
Helland, G. M.....	Spring Grove	Mann, A. S., Jr.....	Rochester	Schmidt, H. W.....	Rochester
Helland, J. W.....	Spring Grove	Mann, F. C.....	Rochester	Schulhof, M. G.....	Rochester
Helm, Standiford.....	Rochester	Marcle, D. M.....	Rochester	Searles, P. W.....	Rochester
Helmholz, H. F.....	Rochester	Mason, L. K.....	Rochester	Secord, E. W.....	Rochester
Hempstead, B. E.....	Rochester	Masson, D. M.....	Rochester	Sheldon, W. D.....	Rochester
Hench, P. S.....	Rochester	Masson, J. C.....	Rochester	Shoemaker, Rosemary.....	Rochester
Henderson, M. S.....	Rochester	Mayo, C. H.....	Rochester	Sibley, W. L.....	Rochester
Henthorne, J. C.....	Rochester	Mayo, C. W.....	Rochester	Simpson, W. C.....	Rochester
Herrell, W. E.....	Rochester	Mayo, W. J.....	Rochester	Simonton, K. M.....	Rochester
Hertz, C. S.....	Rochester	Maytum, C. K.....	Rochester	Skaug, H. M.....	Chatfield
Hewitt, E. S.....	Rochester	McCarty, W. C.....	Rochester	Slocumb, C. H.....	Rochester
Hewitt, R. M.....	Rochester	McDonald, J. R.....	Rochester	Smith, B. F.....	Rochester
Heyerdale, O. C.....	Rochester	McGowan, J. M.....	Rochester	Smith, C. H.....	Rochester
Heyerdale, W. W.....	Rochester	McKaig, C. B.....	Pine Island	Smith, F. D.....	Kasson
Hines, E. A., Jr.....	Rochester	McKean, R. S.....	Rochester	Smith, F. L.....	Rochester
Hinshaw, H. C.....	Rochester	McCray, P. M., Jr.....	Rochester	Smith, H. L.....	Rochester
Horton, B. T.....	Rochester	Meyerding, H. W.....	Rochester	Smith, L. A.....	Rochester
Howell, L. P.....	Rochester	Miller, J. M.....	Rochester	Smith, N. D.....	Rochester
Hubby, J. W.....	Rochester	Mills, J. H.....	Tacoma, Wash.	Snell, A. M.....	Rochester
Hunt, A. B.....	Rochester	Moersch, F. P.....	Rochester	Snyder, J. M.....	Rochester
Ingham, D. W.....	Rochester	Moersch, H. J.....	Rochester	Sowers, B. F.....	Rochester
Jackman, R. J.....	Rochester	Montgomery, Hamilton.....	Rochester	Sprague, R. G.....	Rochester
Jensen, R. M.....	Rochester	Montgomery, T. R.....	Rochester	Stalker, L. K.....	Rochester
Jewett, R. E.....	Rochester	Moore, F. H.....	Rochester	Steenrod, E. J.....	Rochester
Johnson, H. P.....	Harmony	Morlock, C. G.....	Rochester	Steffens, L. F.....	Rochester
Johnson, R. B.....	Lanesboro	Mousel, L. H.....	Rochester	Stevenson, C. A.....	Rochester
Jones, H. M.....	Rochester	Mulrooney, R. E.....	Rochester	Stuhler, L. G.....	Rochester
Joyce, G. T.....	Rochester	Mundell, B. J.....	Rochester	Sutherland, C. G.....	Rochester
Kahler, J. E.....	Rochester	Mussey, R. D.....	Rochester	Swingle, H. F., Jr.....	Rochester
Kaump, D. H.....	Rochester	Nass, H. A.....	Mabel	Teem, M. Van B.....	Rochester
Kearney, R. W.....	Rochester	Neel, H. B.....	Rochester	Tennison, W. J., III.....	Rochester
Keith, N. M.....	Rochester	Nesselrod, J. P.....	Rochester	Thompson, G. J.....	Rochester
Kelly, H. M.....	Rochester	New, G. B.....	Rochester	Tierney, C. M.....	Harmon
Kendrick, T. D. H.....	Rochester	Odel, H. M.....	Rochester	Tillisch, J. H.....	Rochester
Kennedy, R. L. J.....	Rochester	O'Leary, P. A.....	Rochester	Tuohy, E. B.....	Rochester
Kepler, E. J.....	Rochester	Olsen, A. M.....	Rochester	Wagner, H. P.....	Rochester
Kermott, L. H., Jr.....	Rochester	Olson, E. A.....	Pine Island	Walsh, M. N.....	Rochester
Kernohan, J. W.....	Rochester	Olson, G. E.....	West Concord	Walters, Waltman.....	Rochester
Kerr, J. G.....	Rochester	Ongard, L. K., Jr.....	Houston	Ward, C. E.....	Rochester
Kirklin, B. R.....	Rochester	Ongard, L. K., Sr.....	Houston	Washburn, R. N.....	Rochester
Kirklin, O. L.....	Rochester	Parker, R. L.....	Rochester	Watkins, C. H.....	Rochester
Knepper, P. A.....	Rochester	Parkhill, E. M.....	Rochester	Waugh, J. M.....	Rochester
Koelsche, G. A.....	Rochester	Pemherton, J. deJ.....	Rochester	Weber, H. M.....	Rochester
Kowallis, G. F.....	Rochester	Perozi, Thelma.....	Rochester	Weir, J. F.....	Rochester
Kraft, H. C.....	Rochester	Peterson, D. L.....	Rochester	Welch, C. S.....	Rochester
Krusen, F. H.....	Rochester	Pilcher, Frederick, Jr.....	Rochester	Wellbrock, W. L. A.....	Rochester
Kvale, W. F.....	Rochester	Piper, M. C.....	Rochester	Wesson, H. R.....	Rochester
Laird, D. R.....	Rochester	Plummer, W. A.....	Rochester	Whittaker, L. D.....	Rochester
Lannin, J. C.....	Mabel	Pollock, L. W.....	Rochester	Wilbur, D. L.....	Rochester
Leddy, E. T.....	Rochester	Pool, T. L.....	Rochester	Wilder, R. M.....	Rochester
Lemon, R. G.....	Rochester	Popp, W. C.....	Rochester	Williams, D. H.....	Rochester
Lemon, W. S.....	Rochester	Prangen, A. D.....	Rochester	Williams, H. L., Jr.....	Rochester
Lenton, H. P.....	Rochester	Prickman, L. E.....	Rochester	Williams, R. V.....	Rushford
Lewis, E. B.....	Rochester	Priestley, J. T.....	Rochester	Willius, F. A.....	Rochester
Lillie, H. I.....	Rochester	Randall, L. M.....	Rochester	Wilson, L. B.....	Rochester
Lipscomb, W. R.....	Rochester	Regan, J. F.....	Rochester	Wolff, L. H.....	Rochester
Lloyd, S. J.....	Rochester	Rhorer, R. J.....	Rochester	Wolfman, D. J.....	Rochester
Lochead, D. C.....	Rochester	Rickey, G. L.....	Rochester	Woltman, H. W.....	Rochester
Logan, A. H.....	Rochester	Risser, A. F.....	Stewartville	Wood, G. H.....	Rochester
Lord, G. A.....	Rochester	Rivers, A. B.....	Rochester	Wood, H. G.....	Rochester
Love, J. G.....	Rochester	Robertson, H. E.....	Rochester	Woodruff, C. W.....	Chatfield
Lovelady, S. B.....	Rochester	Rosenberg, E. F.....	Rochester	Worok, D. H.....	Rochester
Luden, Georgine, Victoria, B. C., Can.	Lundy	Rozendaal, H. M.....	Schenectady, N. Y.	Yeager, C. L.....	Rochester
Lundy, J. S.....	Rochester	Rosenow, E. C.....	Rochester	Young, H. H.....	Rochester
Macey, H. B.....	Rochester	Rosenow, E. C., Jr.....	Rochester	Zide, H. A.....	Rochester

PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

Douglas, Grant, Otter Tail and Wilkin Counties
Regular meetings, Second Wednesday every even month
Annual meeting, December
Number of Members: 54

President	
Vail, J. B.....	Henning
Secretary	
Baker, N. H.....	Fergus Falls
Arndt, H. W.....	Frazee
Baker, A. C.....	Fergus Falls
Baker, N. H.....	Fergus Falls
Bergquist, K. E.....	Battle Lake
Blakey, A. R.....	Osakis
Boline, C. A.....	Battle Lake
Boyd, L. M.....	Alexandria
Boysen, Peter.....	Pelican Rapids
Broker, W. S.....	Battle Lake
Burnap, W. L.....	Fergus Falls
Clifford, G. W.....	Osakis
Combaker, L. C.....	Fergus Falls
Drought, W. W.....	Fergus Falls
Esser, John.....	Perham

Estrem, C. O.....	Fergus Falls
Gardner, W. P.....	Fergus Falls
Hand, W. R.....	Elbow Lake
Hanson, E. C.....	New York Mills
Haskell, A. D.....	Alexandria
Heiberg, E. A.....	Fergus Falls
Hodgson, C. H.....	Rochester
Jacobs, G. C.....	Fergus Falls
Johnson, O. V.....	Fergus Falls
Katzberg, L. W.....	Fergus Falls
Kierland, P. E.....	Alexandria
Lee, W. A.....	Fergus Falls
Leibold, H. H.....	Parkers Prairie
Leland, J. T.....	Herman
Lewis, A. J.....	Henning
Love, F. A.....	Carlos
Lund, C. J. T.....	Underwood
Meckstroth, C. W.....	Brandon
Miller, W. A.....	New York Mills
Mouritsen, G. J.....	Fergus Falls

Naegeli, Frank.....	Fergus Falls
Nelson, W. I.....	Minneapolis
Otto, H. C.....	Frazee
Parson, E. L. B.....	Elbow Lake
Parson, L. R.....	Elbow Lake
Patterson, W. L.....	Fergus Falls
Paulson, T. S.....	Fergus Falls
Powers, F. W.....	Barret
Randall, A. M.....	Ashb
Reeve, E. T.....	Elbow Lake
Rimer, E. W.....	Breckenridge
Satersmoen, Theodore.....	Pelican Rapids
Sather, E. R.....	Alexandria
Serkland, J. C.....	Rothsa
Steube, R. W.....	Alexandria
Sutton, H. R.....	Hoffman
Tanquist, E. J.....	Alexandria
Vail, J. B.....	Henning
Windsor, R. L.....	Fergus Falls
Wray, W. E.....	Campbell

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

RAMSEY COUNTY MEDICAL SOCIETY

Regular meetings, last Monday in every month excepting June, July, August

Annual meeting, last Monday in January

Number of Members: 324

President		
Gaman, G. K.	St. Paul	
Secretary		
Hultkrans, J. C.	St. Paul	
bott, J. S.	St. Paul	
rens, A. E.	St. Paul	
rens, A. H.	St. Paul	
berts, M. W.	St. Paul	
den, J. F.	St. Paul	
exander, F. H.	St. Paul	
mstrong, J. M.	St. Paul	
nquist, A. S.	St. Paul	
relius, J. R.	St. Paul	
zman, C. F.	St. Paul	
ckus, A. S.	St. Paul	
con, D. K.	St. Paul	
con, L. C.	St. Paul	
rry, L. W.	St. Paul	
rnness, Nellie.	St. Paul	
adie, W. D.	Cannon Falls	
als, Hugh	St. Paul	
ek, H. O.	St. Paul	
ll, C. C.	St. Paul	
nepe, J. L.	St. Paul	
nnion, P. H.	St. Paul	
ntley, N. P.	St. Paul	
rrisford, P. D.	St. Paul	
cek, J. F.	St. Paul	
nger, H. E.	St. Paul	
rnberg, T. L.	St. Paul	
ck, R. A.	St. Paul	
eckmann, Egil	St. Paul	
hland, E. H.	St. Paul	
lender, H. L.	St. Paul	
rg, J. F.	St. Paul	
uma, L. R.	St. Paul	
and, G. D.	St. Paul	
ay, E. R.	St. Paul	
iggs, J. F.	St. Paul	
odie, W. D.	St. Paul	
own, E. I.	St. Paul	
own, J. C.	St. Paul	
linski, T. J.	St. Paul	
rch, F. E.	St. Paul	
rnns, R. M.	St. Paul	
erton, C. G.	St. Paul	
asher, H. H.	St. Paul	
ldwell, J. P.	St. Paul	
rroll, W. C.	St. Paul	
atterton, C. C.	St. Paul	
ristiansen, A.	St. Paul	
ristison, J. T.	St. Paul	
ark, H. B., Jr.	St. Paul	
ark, T. C.	Minneapolis	
lby, Woodard	St. Paul	
le, W. H.	St. Paul	
llie, H. G.	St. Paul	
lvin, A. R.	St. Paul	
nnor, C. E.	St. Paul	
ok, C. K.	St. Paul	
ountryman, R. S.	St. Paul	
owern, E. W.	North St. Paul	
itchfield, L. R.	St. Paul	
ulligan, J. M.	St. Paul	
ack, L. G.	St. Paul	
ugherty, E. B.	St. Paul	
ugherty, L. E.	St. Paul	
avis, Herbert	St. Paul	
avis, William	St. Paul	
edolph, Karl	St. Paul	
elavan, P. A.	St. Paul	
erauf, B. I.	St. Paul	
ackson, T. H., Jr.	St. Paul	
ttman, G. C.	St. Paul	
onohue, P. F.	St. Paul	
ovre, C. M.	St. Paul	
rake, C. B.	St. Paul	
unn, J. N.	St. Paul	
arl, G. A.	St. Paul	
arl, Robert	St. Paul	
lund, G.	St. Paul	
wards, J. W.	St. Paul	
wards, T. J.	St. Paul	
y, O. S.	South St. Paul	
erson, E. C.	St. Paul	
ndress, E. K.	St. Paul	
ngberg, E. J.	St. Paul	
rnest, G. C.	South St. Paul	
shelby, E. C.	St. Paul	
hey, E. W.	St. Paul	
erguson, J. C.	St. Paul	
esler, H. H.	St. Paul	
anagan, H. F.	St. Paul	
Fogarty, C. W.	St. Paul	
Fogelberg, E. J.	St. Paul	
Foley, F. E. B.	St. Paul	
Freeman, C. D.	St. Paul	
Gager, E. C.	St. Paul	
Garbrecht, Arthur	St. Paul	
Gardiner, D. G.	St. Paul	
Geer, E. K.	St. Paul	
Gehlen, J. N.	St. Paul	
Geist, G. A.	St. Paul	
Ghent, C. H.	St. Paul	
Gibbs, E. C.	St. Paul	
Gillfillan, J. S.	St. Paul	
Ginsberg, Wm.	St. Paul	
Goltz, E. V.	St. Paul	
Grant, H. W.	St. Paul	
Gratzek, Thomas	St. Paul	
Gruenhagen, A. P.	St. Paul	
Hagaman, G. K.	St. Paul	
Hall, A. R.	St. Paul	
Hall, H. H.	St. Paul	
Hammes, E. M.	St. Paul	
Hammond, J. F.	St. Paul	
Harmon, G. E.	St. Paul	
Hartfield, W. F.	St. Paul	
Hartley, E. C.	St. Paul	
Hassett, M. F.	St. Paul	
Hauser, V. P.	St. Paul	
Hawkins, V. J.	St. Paul	
Heath, A. C.	Stillwater	
Heck, W. W.	St. Paul	
Hedenstrom, F. G.	St. Paul	
Hengstler, W. H.	St. Paul	
Hensel, C. N.	St. Paul	
Heron, R. C.	St. Paul	
Herrmann, E. T.	St. Paul	
Hesselgrave, S. S.	St. Paul	
Hilger, A. W.	St. Paul	
Hilger, D. D.	St. Paul	
Hilger, L. A.	St. Paul	
Hilleboe, H. E.	St. Paul	
Hiniker, L. P.	St. Paul	
Hochfilzer, J. J.	St. Paul	
Hoff, Alfred	St. Paul	
Hoffman, M. H.	St. Paul	
Holcomb, J. T.	St. Paul	
Holcomb, O. W.	St. Paul	
Holt, J. E.	St. Paul	
Hopkins, G. W.	St. Paul	
Howard, M. A.	St. Paul	
Howard, W. S.	St. Paul	
Hullsiek, R. B.	St. Paul	
Hultkrans, J. C.	St. Paul	
Ide, A. W.	St. Paul	
Ikedai, Kano	St. Paul	
Ingerson, C. A.	St. Paul	
Jesion, J. W.	St. Paul	
Johanson, W. G.	St. Paul	
Johnson, A. M.	St. Paul	
Johnson, J. A.	St. Paul	
Johnson, R. G.	St. Paul	
Johnson, T. H.	San Francisco, Calif.	
Jones, D. C.	St. Paul	
Jones, E. M.	St. Paul	
Kamman, G. R.	St. Paul	
Kannary, E. L.	St. Paul	
Kaplan, D. H.	St. Paul	
Kasper, E. M.	St. Paul	
Keefe, Rolland	St. Paul	
Kelly, J. V.	St. Paul	
Kelly, P. H.	St. Paul	
Kenefick, E. V.	St. Paul	
Kennedy, W. A.	St. Paul	
Kesting, Herman	St. Paul	
King, G. L.	St. Paul	
King, Z. P.	St. Paul	
Klein, H. N.	St. Paul	
Knauff, M. K.	St. Paul	
Kugler, A. A.	St. Paul	
Kvitrud, Gilbert	St. Paul	
Langenderfer, F. V.	St. Paul	
Larsen, C. L.	St. Paul	
Lax, M. H.	St. Paul	
Leahy, Bartholmew	St. Paul	
Leavenworth, R. O.	St. Paul	
Leitch, Archibald	St. Paul	
Leonard, G. J.	Hastings	
Lepak, J. A.	St. Paul	
Lerche, William	Cable, Wis.	
Leven, N. L.	St. Paul	
Levin, Bert	St. Paul	
Lick, C. L.	St. Paul	
Lippman, H. S.	St. Paul	
Little, W. J.	St. Paul	
Livingstone, J. W.	Hudson, Wis.	
Lowe, E. R.	South St. Paul	
Lowe, T. A.	South St. Paul	
Lundholm, A. M.	St. Paul	
Lynch, F. W.	St. Paul	
Madden, J. F.	St. Paul	
Markoe, J. C.	St. Paul	
Martineau, J. L.	St. Paul	
Mattson, C. H.	St. Paul	
McCarthy, J. J.	St. Paul	
McCarthy, W. R.	St. Paul	
McClanahan, J. H.	White Bear	
McClanahan, T. S.	White Bear	
McLaren, J. M.	St. Paul	
McNevin, C. F.	St. Paul	
Meade, J. R.	St. Paul	
Mears, B. J.	St. Paul	
Medelman, J. P.	St. Paul	
Meyerding, E. A.	St. Paul	
Moga, J. A.	St. Paul	
Mogilner, S. N.	St. Paul	
Molander, H. A.	St. Paul	
Moquin, M. A.	St. Paul	
Moran, T. R.	St. Paul	
Moriarty, Berenice	St. Paul	
Morrissey, F. B.	St. Paul	
Mortenson, N. G.	St. Paul	
Moynihan, T. J.	St. Paul	
Muller, R. T.	St. Paul	
Myers, Thomas	St. Paul	
Naegeli, A. E.	St. Paul	
Naslund, A. W.	St. Paul	
Neher, F. H.	St. Paul	
Nelson, L. A.	St. Paul	
Nichols, A. E.	St. Paul	
Noble, J. F.	St. Paul	
Nye, K. A.	St. Paul	
Nye, L. L.	St. Paul	
O'Connor, L. J.	St. Paul	
Oerting, Harry	St. Paul	
Ogden, Warner	St. Paul	
Ohage, Justus, Jr.	St. Paul	
Olson, C. A.	St. Paul	
O'Reilly, B. E.	St. Paul	
Ostergren, E. W.	St. Paul	
Ouelette, A. J.	St. Paul	
Page, C. V.	St. Paul	
Pearson, F. R.	St. Paul	
Pedersen, A. H.	St. Paul	
Perry, C. G.	St. Paul	
Peterson, D. B.	St. Paul	
Peterson, J. L. E.	St. Paul	
Peterson, V. N.	St. Paul	
Plondke, F. J.	St. Paul	
Prendergast, H. J.	St. Paul	
Prendergast, J. J.	St. Paul	
Prins, L. R.	Albert Lea	
Radabaugh, R. C.	Hastings	
Ramsey, W. R.	St. Paul	
Richards, E. T. F.	St. Paul	
Richardson, H. E.	St. Paul	
Ritchie, H. P.	St. Paul	
Ritt, A. E.	St. Paul	
Rogers, J. T.	St. Paul	
Rogers, S. F.	St. Paul	
Rosenholtz, Burton	St. Paul	
Rosenthal, Robert	St. Paul	
Rothrock, J. L.	St. Paul	
Rothschild, H. J.	St. Paul	
Roy, Philemon	St. Paul	
Ruhberg, G. N.	St. Paul	
Rutherford, W. C.	St. Paul	
Ryan, J. J.	St. Paul	
Ryan, J. M.	St. Paul	
Ryan, M. E.	St. Paul	
Sarnecki, M. M.	St. Paul	
Satterlund, V. L.	St. Paul	
Savage, F. J.	St. Paul	
Schoch, R. B. J.	St. Paul	
Schons, Edward	St. Paul	
Schuldt, F. C.	St. Paul	
Schulze, A. G.	St. Paul	
Schwyzzer, Arnold	St. Paul	
Scott, E. E.	St. Paul	
Senkler, G. E.	St. Paul	
Setzer, H. J.	St. Paul	
Shellman, J. L.	St. Paul	
Shillington, M. A.	St. Paul	
Shimonek, S. W.	St. Paul	
Short, Jacob	St. Paul	
Simons, L. T.	St. Paul	
Singer, B. J.	St. Paul	
Skinner, H. O.	St. Paul	
Smisek, E. A.	St. Paul	
Snyder, G. W.	St. Paul	
Sohlberg, O. I.	St. Paul	

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

Souster, B. B.....St. Paul
Sprafka, J. M.....St. Paul
Steinberg, C. L.....St. Paul
Stern, E. G.....St. Paul
Stewart, Alexander.....St. Paul
Stinnette, S. E.....St. Paul
Stoeckmann, A. E.....St. Paul
Stolpestad, A. H.....St. Paul
Stolpestad, H. L.....St. Paul
Strate, G. E.....St. Paul
Swanson, J. A.....St. Paul
Swendson, J. J.....St. Paul
Teisberg, C. B.....St. Paul
Thompson, F. A.....St. Paul
Thoreson, M. O.....St. Paul

Tift, C. R.....St. Paul
Tregilgas, H. R.....South St. Paul
Van Slyke, C. A.....St. Paul
Veirs, Dean.....St. Paul
Veirs, R. S.....St. Paul
Venables, A. E.....St. Paul
Von der Weyer, William.....St. Paul
Waas, C. W.....St. Paul
Walker, A. E.....St. Paul
Walter, C. W.....St. Paul
Warnock, R. W.....St. Paul
Warren, C. A.....St. Paul
Warren, E. L.....St. Paul
Watz, C. E.....St. Paul
Welch, M. C.....St. Paul

Werner, O. S.....Cambrid
Wheeler, M. W.....St. Pa
Whitacre, J. C.....St. Pa
Whitmore, Frank.....St. Pa
Williams, C. K.....St. Pa
Williamson, G. A.....St. Pa
Wilson, J. A.....St. Pa
Wilson, J. V.....St. Pa
Winnick, J. B.....St. Pa
Wold, K. C.....St. Pa
Wolfe, H. H.....St. Pa
Wolff, H. J.....St. Pa
Youngren, E. R.....St. Pa
Zander, C. H.....St. Pa
Zimmermann, H. B.....St. Pa

RED RIVER VALLEY MEDICAL SOCIETY

Kittson, Mahnomen, Marshall, Norman, Pennington, Polk, Red Lake and Roseau Counties

Regular meetings, quarterly

Annual meeting, second Tuesday, December

Number of Members: 56

President
Delmore, J. L.....Roseau
Secretary
Oppegaard, C. L.....Crookston

Adkins, C. H.....Thief River Falls
Adkins, G. H.....Grygla
Anderson, W. S.....Minneapolis
Berge, D. O.....Roseau
Bertelson, O. L.....Crookston
Biedermann, Jacob.....Thief River Falls
Blegen, H. M.....Warren
Boardman, D. V.....Twin Valley
Bohl, G. W.....Ada
Borreson, Baldwin.....Thief River Falls
Bratrud, O. E.....Thief River Falls
Brink, A. A.....Baudette
Brown, L. L.....Crookston
Culver, L. G.....Thief River Falls

Delmore, J. L.....Roseau
Ederer, J. J.....Mahnomen
Edstrom, Henry.....Dubuque, Iowa
Erickson, Eskil.....Halstad
Froats, C. W.....Thief River Falls
Griffin, P. J.....Fertile
Haugseth, Enoch.....Twin Valley
Henney, W. H.....McIntosh
Hollands, W. H.....Fisher
Holmstrom, C. H.....Warren
Kahala, Arthur.....Crookston
Kirk, G. P.....East Grand Forks
Knutson, G. A.....Greenbush
Leitch, N. M.....Warroad
*Locken, O. E.....Crookston
Lynde, O. G.....Thief River Falls
Mellby, O. F.....Thief River Falls
Mercil, W. F.....Crookston
Morley, G. A.....Crookston
Nelson, H. E.....Crookston
Norman, J. F.....Crookston

Ohnstad, J. L.....McIntosh
Oppegaard, C. L.....Crookston
Oppegaard, M. O.....Crookston
Paradis, W. G.....Crookston
Parsons, J. G.....Crookston
Reff, A. R.....Crookston
Rice, H. R.....Roseau
Roy, J. A.....Red Lake Falls
Shaleen, A. W.....Hallowell
Shedlov, Abraham.....Fosston
Sherman, R. V.....Thief River Falls
Smith, A. M.....Thief River Falls
Sorenson, E. M.....Tully
Stevens, John.....Gonville
Stocking, F. F.....Hallowell
Stuurmanns, S. H.....Erskine
Swedenburg, A. W.....Thief River Falls
Swendenburg, P. A.....Pawnee, Nebraska
Tanglin, W. G. L.....Mahnomen
Torgerson, W. B.....Olmsted
Wiltout, I. G.....Oshtemo

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Regular meetings, May, August, November, and February

Annual meeting, May

Number of Members: 25

President
Saffert, C. A.....New Ulm
Secretary
Fritsche, C. J.....New Ulm
Brey, F. W.....Wabasso
Dubbe, F. H.....New Ulm
Dysterheft, A. F.....Gaylord
Fritsche, Albert.....New Ulm
Fritsche, C. J.....New Ulm

Fritsche, T. R.....New Ulm
Gibbons, F. C.....Comfrey
Goblirsch, A. P.....Sleepy Eye
Hammermeister, T. F.....New Ulm
Hovde, Rolf.....Winthrop
Jamieson, Earl.....Walnut Grove
Just, H. J.....Lafayette
Kolset, C. D.....Sanborn
Kusske, A. L.....New Ulm
Mortensbak, H. E.....Hanska

Nuessle, W. G.....Springfield
Olson, K. L.....Gibbs
Peterson, R. A.....Vest
Reineke, G. F.....New Ulm
Saffert, C. A.....New Ulm
Seifert, O. J.....New Ulm
Vogel, H. A. L.....New Ulm
Vogel, J. H.....New Ulm
Weiser, G. B.....New Ulm
Wohlrahe, E. J.....Springfield

RENNVILLE COUNTY MEDICAL SOCIETY

Regular meeting, first Tuesday of each month

Annual meeting, first Tuesday of November

Number of Members: 20

President
Adams, R. C.....Bird Island
Secretary
Madland, R. S.....Fairfax
Adams, R. C.....Bird Island
Billings, R. E.....Franklin
Brand, W. A.....Redwood Falls

Cole, H. B.....Redwood Falls
Cole, J. G.....Redwood Falls
Cosgriff, J. A.....Bird Island
Dordal, J.....Sacred Heart
Fawcett, A. M.....Renville
Flinn, T. E.....Redwood Falls
Gaines, E. C.....Buffalo Lake
Hartmann, C. M.....Fairfax
Johnson, O. H.....Redwood Falls

Johnson, W. E.....Morgan
Lenz, J. R.....Mort
Loenholdt, E. H.....Hector
Madland, R. S.....Fairfax
Mesker, G. H.....Olmsted
Passer, A. A.....Olmsted
Penhall, F. W.....Mort
Solsem, F. N.....Sacred Heart

RICE COUNTY MEDICAL SOCIETY

Regular meetings, seven annually

Annual meeting, December

Number of members: 39

President
Huxley, F. R.....Faribault
Secretary
Plonske, C. J.....Faribault
Babcock, F. M.....Northfield
Beede, E. R.....Faribault
Davis, F. U.....Faribault
Dugan, L. F.....Faribault
Dungay, N. S.....Northfield
Francis, D. W.....Morristown
Haessly, S. B.....Faribault

Hanson, A. M.....Faribault
Haynes, A. L.....Faribault
Huxley, F. R.....Faribault
Kanne, C. W.....Faribault
Kucera, S. T.....Lonsdale
Lende, Norman.....Faribault
Lexa, F. J.....Lonsdale
Lufkin, C. D.....Northfield
Lyght, C. E.....Northfield
Mayland, M. E.....Faribault
McKeon, J. O.....Montgomery
Meyer, F. C.....Kenyon
Meyer, P. F.....Faribault
Moses, Joseph, Jr.....Northfield
Moses, R. R.....Kenyon
Murdoch, J. M.....Faribault

Nuetzman, A. W.....Faribault
Plonske, C. J.....Faribault
Robilliard, C. M.....Faribault
Rohrer, C. A.....Waterville
Rudie, C. N.....Kenyon
Rumpf, C. W.....Fairbairn
Rumpf, W. H.....Faribault
Seeley, I. F.....Northfield
Stewart, Gwendolyn.....Fairbairn
Thorson, O. P.....Northfield
Traeger, C. A.....Fairbairn
Warren, F. S.....Washington, D.C.
Wilkowske, R. J.....Nerstrand
Wilson, Warren.....Northfield
Wilson, W. E.....Northfield
Wylie, A. R. T.....Fairbairn

*Deceased.

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

ST. LOUIS COUNTY MEDICAL SOCIETY

Carlton, Cook, Itasca, Lake and St. Louis Counties

Regular meetings, second Thursday every month

Annual meeting, December

Number of Members: 191

President

aley, J. R. Duluth

Secretary

Rae, G. C. Duluth

ams, B. S. Hibbing
ly, E. R. Gilbert
ns, W. M. Eveleth
nstrong, E. L. Duluth
ens, A. G. Duluth
es, G. T. Ely
ley, E. C. Duluth
ley, W. R. Duluth
don, Richard. Duluth
ney, L. A. Duluth
dez, G. L. Duluth
nco, A. J. Duluth
et, H. E. Grand Rapids
cklock, S. S. Hibbing
kely, C. C. Barnum
man, P. G. Duluth
ven, R. L. Hibbing
ver, S. H., Jr. Duluth
ver, S. H., Sr. Duluth
verman, N. J. Duluth
y, C. W. Biwabik
y, P. N. Duluth
ckley, R. P. Duluth
ms, R. L. Two Harbors
ntwell, W. F. International Falls
stens, C. F. Hibbing
apman, T. L. Duluth
ney, E. L. Duluth
essen, James. Duluth
stensen, E. P. Two Harbors
rk, F. F. Duluth
ment, T. G. Duluth
lins, A. N. Duluth
lins, H. C. Duluth
entry, W. A. Duluth
entry, W. D. Duluth
vis, B. F. Duluth
olittle, L. E. Duluth
yle, G. C. Duluth
enning, F. C. Duluth
kman, P. F. Duluth
kman, R. J. Duluth
blad, J. W. Duluth
lund, W. J. Duluth
as, F. J. Duluth
manuel, K. W. Duluth
gdahl, F. W. Grand Rapids
pard, R. M. Cloquet
rem, T. A. Hibbing
ens, H. B. Virginia
nkboner, A. V. Buhl
wcett, K. R. Duluth
lows, M. F. Duluth
uling, J. C. Bovey
la, M. J. Duluth
cher, M. McC. Duluth
rbes, R. S. Duluth
ndron, J. F. Grand Rapids
lespie, M. G. Duluth

Gillespie, N. H. Duluth
Giroux, A. A. Duluth
Goldish, D. R. Duluth
Goodman, C. E. Virginia
Gowan, L. R. Duluth
Graham, Robert. Duluth
Graves, W. N. Duluth
Hall, A. E. Virginia
Haney, C. L. Duluth
Harris, C. N. Hibbing
Hatch, W. E. Duluth
Hathaway, S. J. Proctor
Hayes, M. F. Nashauk
Hedberg, G. A. Nopeming
Heiam, W. C. Cook
Heimark, O. E. Duluth
Hilding, A. C. Duluth
Hill, F. E. Duluth
Hirschboeck, F. J. Duluth
Hoff, H. O. Duluth
Hursh, M. M. Cohasset
Jacobson, Clarence. Chisholm
Jensen, T. J. Duluth
Jolin, F. M. Grand Rapids
Jolin, R. V. Grand Rapids
Karleen, P. E. Boulder Creek, Calif.
Keyes, C. R. Duluth
Kiesling, I. H. Nashauk
Klein, A. D., Jr. Chisholm
Klein, Harry. Duluth
Knapp, F. N. Duluth
Kohlbray, C. O. Duluth
Kotchevar, F. R. Eveleth
Kraft, Peter. Duluth
Krantz, C. I. Duluth
Kuth, J. R. Duluth
Laird, A. T. Nopeming
Lenont, C. B. Virginia
Lepak, F. J. Duluth
Litman, S. N. Duluth
Loofbourrow, E. H. Keewatin
Lundquist, C. W. Hibbing
Macfarlane, P. H. Chisholm
MacRae, G. C. Duluth
Magney, F. H. Duluth
Malmstrom, J. A. Virginia
Manley, J. R. Duluth
Martin, E. T. Duluth
Martin, W. C. Duluth
Mayne, R. M. Duluth
McCarty, P. D. Ely
McComb, C. F. Duluth
McCoy, M. K. Duluth
McDaniel, S. P. Virginia
McDonald, A. L. Duluth
McHaffie, O. L. Duluth
McLeod, J. L. Grand Rapids
McNutt, J. R. Duluth
Mead, C. H. Duluth
Merriman, L. L. Duluth
Moe, R. J. Duluth
Moe, Thomas. Moose Lake
Monroe, P. B. Two Harbors
More, C. W. Eveleth
Morsman, L. W. Hibbing
Morss, C. R. Zumbrota

Mueller, S. C. Duluth
Nelson, E. H. Chisholm
Nelson, R. L. Duluth
Nicholson, M. A. Duluth
Nutting, R. E. Duluth
Olson, A. E. Duluth
Parker, O. W. Ely
Pearsall, R. P. Virginia
Pennie, D. F. Duluth
Peterson, E. N. Virginia
Peterson, J. H. Duluth
Plowman, E. T. Calumet
Power, J. E. Duluth
Puumala, R. H. Cloquet
Raadquist, C. S. Hibbing
Raiter, F. W. S. Cloquet
Raiter, R. F. Cloquet
Robinson, J. M. Duluth
Rowe, O. W. Duluth
Rowles, E. K. Coleraine
Rudie, P. S. Duluth
Ryan, W. J. Duluth
Sach-Rowitz, Alvin. Moose Lake
Salter, R. A. Virginia
Sarff, O. E. Virginia
Sax, S. G. Duluth
Scherer, C. A. Duluth
Schroder, C. H. Duluth
Seashore, R. T. Duluth
Shapiro, E. Z. Duluth
Shastid, T. H. Duluth
Shaw, A. W. Buhl
Sinamark, Andrew. Hibbing
Sisler, C. E. Grand Rapids
Slyfield, F. F. Duluth
Smith, C. M. Duluth
Smith, W. R. Grand Marais
Spicer, F. W. Duluth
Spurbeck, R. G. Cloquet
Strathern, M. L. Gilbert
Strobel, W. G. Duluth
Stuart, A. B. Cloquet
Sukeforth, L. A. Duluth
Sutherland, H. N. Ely
Swanson, P. E. Virginia
Swenson, A. O. Duluth
Taylor, C. W. Duluth
Tibbetts, M. H. Duluth
Tilderquist, D. L. Duluth
Tuohy, E. L. Duluth
Urberg, S. E. Duluth
Vercellini, C. E. Duluth
Walker, A. E. Duluth
Wallace, M. O. Duluth
Watson, C. G. Soudan
Webber, E. E. Duluth
Wells, A. H. Duluth
West, E. J. Duluth
Wheeler, D. W. Duluth
Wilkinson, S. L. Duluth
Wilmot, C. A. Grand Rapids
Wingquist, C. G. Carlton
Winter, J. A. Duluth
Young, T. O. Duluth
Young, V. A. Duluth
Zlatovski, M. L. Duluth

SCOTT-CARVER COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of the month

Annual meeting, June

Number of Members: 33

President

son, C. J. Belle Plaine

Secretary

ow, E. R. Arlington

ck, F. H. Shakopee
ram, J. W. Young America
renka, C. F. New Prague
ement, W. B. Shakopee
ow, E. R. Arlington
lund, E. J. Norwood
amerson, W. S. Mayer

Fischer, H. P. Shakopee
Havel, H. W. Jordan
Hebeisen, M. B. Chaska
Henriksen, H. G. Elko
Juergens, H. M. Belle Plaine
Klein, J. C. Shakopee
Kortsch, F. P. Prior Lake
Lightbourn, E. T. Jordan
Maertz, W. F. New Prague
Martin, T. P. Arlington
Nagel, H. D. Waconia
Novak, E. E. New Prague
Olson, C. J. Belle Plaine

Ormond, D. T. Waconia
Pearson, B. F. Shakopee
Phillips, W. H. Jordan
Pogue, R. E. Glendale, Calif.
Reiter, H. W. Shakopee
Riley, J. B. Fergus Falls
Schimelpfenig, G. T. Chaska
Shrader, J. S. Jordan
Simons, B. H. Chaska
Westerman, A. E. Montgomery
Westerman, F. C. Montgomery
Woodworth, L. F. Le Center
Wunder, H. E. Shakopee

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

Cottonwood, Jackson, Murray, Nobles, Pipestone and Rock Counties
Regular meetings, November and April or May
Annual meeting, November
Number of Members: 68

President
Kilbride, E. A. Worthington

Secretary
DeBoer, Hermanus. Edgerton

Arnold, E. W. Adrian
Basinger, H. P. Windom
Basinger, H. R. Mountain Lake
Beckerling, Gerrit. Edgerton
Benjamin, W. G. Pipestone
Bofenkamp, F. W. Luverne
Bong, J. H. Jasper
Brown, A. H. Pipestone
Carlson, J. V. Westbrook
Chadbourne, A. G. Heron Lake
Chunn, S. S. Pipestone
Clark, H. H. Edgerton
Cress, P. J. Ellsworth
DeBoer, Hermanus. Edgerton
Dolan, C. P. Worthington
Doman, V. W. Lakefield
Doms, H. C. Slayton
Dudley, J. H. Windom

Engh, Sigfred. Jackson
Halloran, W. H. Jackson
Halpern, D. J. Brewster
Harrison, P. W. Worthington
Hebbel, Robert. Windom
Hitchings, W. S. Lakefield
Johnson, R. E. Worthington
Kelling, L. F. Lakefield
Kendahl, A. M. Jasper
Kilbride, E. A. Worthington
Kilbride, J. S. Worthington
Larson, J. T. Lake Wilson
Lindahl, M. J. Jasper
Lohmann, J. G. Jasper
Lowe, Thomas. Pipestone
Maitland, D. P. Jackson
Maitland, E. T. Jackson
Manson, F. M. Worthington
McCrea, J. M. Fulda
McElmeel, E. F. Pipestone
McLane, E. G. Jackson
McLane, W. O. Jackson
Mork, B. O. Worthington
Mork, B. O., Jr. Worthington
Nealy, D. E. Adrian

Pankratz, P. J. Mountain Lake
Pasek, A. W. Lismore
Patterson, W. E. Westboro
Piper, W. A. Mountain Lake
Portmann, W. C. Jackson
Priest, R. E. Worthington
Richmond, C. D. Jeffersville
Rose, J. T. Lakefield
Ross, W. P. Worthington
Schade, F. L. Worthington
Schutz, E. S. Mountain Lake
Sherman, C. L. Luverne
Sjostrom, L. E. Stord
Slater, S. A. Worthington
Sogge, L. L. Windom
Stanley, C. R. Worthington
Stevenson, B. M. Fulda
Stratte, H. C. Windom
Thorson, E. O. Luverne
Tofte, Josephine. Minneapolis
Waller, J. D. Wilmar
Williams, A. B. St. Paul
Williams, C. A. Pipestone
William, L. A. Slayton
Wright, C. O. Luverne

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Regular meetings, third Thursday of the month
Annual meeting, third Thursday of December
Number of Members: 56

President
Jones, R. N. St. Cloud

Secretary
Libert, J. N. St. Cloud

Adams, L. P. St. Cloud
Barringer, P. E. St. Cloud
Beuning, J. B. Albany
Brigham, C. F. St. Cloud
Buscher, J. C. St. Cloud
Clark, H. B. St. Cloud
Donaldson, C. S. Foley
DuBois, J. A. Sauk Center
DuBois, J. F. Sauk Center
Engstrom, G. F. Belgrade
Evans, L. M. Sauk Rapids
Fleming, T. N. St. Cloud
Freeman, W. L. St. Cloud
Friesleben, William. Sauk Rapids

Gaida, J. B. St. Cloud
Gelz, J. J. St. Cloud
Goehrs, H. W. St. Cloud
Haberman, Emil. Osakis
Halenbeck, P. L. St. Cloud
Hemstead, Werner. St. Cloud
Henry, C. J. Milaca
Heldridge, George. Foley
Johnson, Walfred. Sauk Center
Jones, R. N. St. Cloud
Kern, M. J. St. Cloud
Kettlewell, R. B. Sauk Center
Kingsbury, E. M. Clearwater
Kohler, D. W. St. Joseph
Koop, S. H. Richmond
Kuhlmann, August. Melrose
Lewis, C. B. St. Cloud
Libert, J. N. St. Cloud
McDowell, J. P. St. Cloud
Mahowald, A. Albany
Meyer, A. A. Melrose

Morgan, H. P. St. Cloud
Moynihan, A. F. Sauk Center
Myre, C. R. Paynesville
Proeschel, R. K. Kimball
Rathbun, C. A. St. Cloud
Richards, W. B. St. Cloud
Ridgway, Alexander. South Haven
Rumpf, W. H. St. Cloud
Rydburg, W. C. Brookton
Schatz, F. J. St. Cloud
Sher, D. A. Cold Spring
Sherwood, G. E. Kimball
Stangl, Fred. St. Cloud
Stangl, P. E. St. Cloud
Stewart, N. E. St. Cloud
Sutton, C. S. St. Cloud
Walfred, K. A. St. Cloud
Watson, W. J. Holdingford
Wenner, W. T. St. Cloud
Wiechman, F. H. St. Cloud
Zachman, A. H. Melrose

STEELE COUNTY MEDICAL SOCIETY

Regular meetings, second Monday of month
Annual meeting, January
Number of Members: 17

President
Schaefer, J. F. Owatonna

Secretary
McEnaney, C. T. Owatonna
Berghs, L. V. Owatonna

Carlson, V. W. Blooming Prairie
Dewey, D. H. Owatonna
Ertel, E. O. Ellendale
Farabaugh, C. L. Owatonna
Flores, O. T. Dodge Center
Kreuzer, T. C. Owatonna
McEnaney, C. T. Owatonna
McIntyre, J. A. Owatonna

Melby, Benedik. Blooming Prairie
Morehead, D. E. Owatonna
Nelson, E. J. Owatonna
Roberts, O. W. Owatonna
Schaefer, J. F. Owatonna
Senn, E. W. Owatonna
Smersh, J. F. Owatonna
Stewart, A. B. Owatonna

UPPER MISSISSIPPI MEDICAL SOCIETY

Aitkin, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Koochiching, Lake of the Woods, Morrison,
Todd and Wadena Counties
Regular meetings, Spring, Summer, Fall and Winter
Annual meeting, January
Number of Members: 91

President
House, Z. E. Cass Lake

Secretary
Badeaux, G. I. Brainerd
Amundson, A. E. Little Falls
Anderson, C. E. Brainerd
Badeaux, G. I. Brainerd
Beise, R. A. Brainerd
Borgerson, A. H. Sebeka
Bosland, H. G. Verndale
Bowers, J. T. Bemidji
Burns, H. A. Ah-Gwah-Ching
Campbell, R. W. Cass Lake
Cardle, G. E. Ah-Gwah-Ching

Carlson, C. E. Aitkin
Cook, J. M. Staples
Corrigan, J. E. Spooner
Davis, L. T. Wadena
Davis, R. D. Clearbrook
Davis, T. C. Wadena
Eriesson, M. G. Long Prairie
Fait, R. V. Little Falls
Feldman, F. M. Mankato
Frost, H. T. Wadena
Garlock, A. V. Bemidji
Garlock, D. H. Bemidji
Gerber, M. P. Brainerd
Ghostley, M. C. Puposky
Gifford, B. L. Long Prairie

Grawn, F. A. Northfield
Grogan, J. S. Wadena
Groschupf, T. P. Bemidji
Grose, F. N. Clarissa
Hanover, R. D. Little Falls
Hanson, E. C. Park Rapids
Hawkinson, J. P. Cross Lake
Healy, R. T. Brainerd
Hendrickson, R. R. Wadena
Higgs, W. W. Park Rapids
Holst, C. F. Little Falls
Holst, J. B. Little Falls
House, Z. E. Cass Lake
Hubbard, O. E. Brainerd

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

bin, E. G. Deerwood
obson, D. J. Blackduck
nieson, E. F. Brainerd
nson, C. E. Pine River
nson, E. W. Bemidji
nson, V. E. Walker
ly, B. W. Aitkin
lan, Irvin. McGregor
lan, S. Z. Aitkin
ngston, J. R. Bemidji
nb, H. L. Little Falls
ney, R. L. Fertile
nson, L. J. Bagley
ughlin, J. T. Grey Eagle
harz, A. J. Browerville
rcum, E. H. Bemidji
rk, Hilbert. Walker

Mason, J. A. International Falls
McCann, D. F. Bemidji
Mosby, M. E. Long Prairie
Moyer, R. E. Minneapolis
Mulligan, A. M. Brainerd
Nelson, N. P. Brainerd
Nelson, W. O. B. Parkers Prairie
Osburn, B. F. International Falls
Petraborg, H. T. Aitkin
Pierce, C. H. Wadena
Potek, David. International Falls
Quanstrom, V. E. Brainerd
Reichelderfer, C. F. Staples
Reynolds, G. S. Walker
Ringle, O. F. Walker
Roberts, L. M. Little Falls
Rosenfield, A. B. Pequot

Sellers, G. K. Motley
Shannon, S. S. Crosby
Simons, E. J. Swanville
Simons, S. J. Akeley
Smith, B. A. Crosby
Spurzem, C. H. Minneapolis
Stafford, C. E. Hewitt
Stein, R. J. Pierz
Thabes, J. A., Jr. Brainerd
Thabes, J. A., Sr. Brainerd
Vandersluis, C. W. Bemidji
Watson, A. M. Royalton
Watson, J. D. Holdingford
Watson, P. T. Cass Lake
Webster, L. J. Ah-Gwah-Ching
Will, W. W. Bertha
Withrow, M. E. International Falls

WABASHA COUNTY MEDICAL SOCIETY

Regular meetings, March, October

Annual meeting, first Thursday after first Monday in October

Number of Members: 10

sche, B. A. Lake City
Secretary
lson, W. F. Lake City

Bayley, E. C. Lake City
Bouquet, B. J. Wabasha
Cochrane, W. J. Lake City
Collins, J. S. Wabasha
Flesche, B. A. Lake City

Frost, R. H. Wabasha
Holt, G. W. Wabasha
Ochsner, C. G. Wabasha
Slocumb, J. A. Plainview
Wilson, W. F. Lake City

WASECA COUNTY MEDICAL SOCIETY

Regular meetings, every three months

Annual meeting, last Friday in December

Number of Members: 10

rnstein, W. C. New Richland
Secretary
ls, G. H. Waseca

Bernstein, W. C. New Richland
Chadbourn, C. R. Janesville
Gallagher, B. J. Waseca
Hottinger, R. C. Janesville
Lynn, J. F. Waseca

McIntire, H. M. Waseca
Oeljen, S. C. G. Waseca
Olds, G. H. Waseca
Spittler, R. O. Fort Snelling
Swenson, O. J. Waseca

WASHINGTON COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday in January, February, March, April, May, September, October,

November and December

Annual meeting second Tuesday in December

Number of Members: 13

hr, J. W. Stillwater
Secretary
leyn, E. S. Stillwater
leyn, E. S. Stillwater

Brooks, G. F. Stillwater
Ewald, R. P. Newport
Humphrey, W. R. Stillwater
Josewski, R. J. Stillwater
Kalinoff, D. Stillwater
Linner, Gunnar. Stillwater

McCarten, F. M. Stillwater
Mingo, F. E. Hugo
Poirier, J. A. Forest Lake
Strand, E. V. Bayport
Stuhr, J. W. Stillwater
Van Meier, Henry. Stillwater

WATONWAN COUNTY MEDICAL SOCIETY

Regular meeting, at call

Annual meeting, December

Number of Members: 8

Carthy, W. J. Madelia
Secretary
imes, H. B. Madelia

Bergman, O. B. St. James
Bratrude, E. J. St. James
Bregel, F. L. St. James
Grimes, H. B. Madelia

Hagen, O. E. Butterfield
Hammar, L. M. Butterfield
McCarthy, W. J. Madelia
Thompson, Albert. St. James

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Pope, Stevens, and Traverse Counties

Regular meetings, second Wednesday in January, April, July and October

Annual meeting, second Wednesday in October

Number of Members: 25

ndberg, A. L. Wheaton
Secretary
ver, I. L. Graceville
neson, A. I. Morris
tes, B. V. Browns Valley
hmler, F. W. Morris
rgan, Otto. Clinton
lsta, Charles. Ortonville

Caine, C. E. Morris
Cumming, J. F. Morris
Doleman, N. F. Tintah
Eberlin, E. A. Glenwood
Elsey, E. McC. Glenwood
Elsey, J. R. Glenwood
Ewing, C. F. Wheaton
Fitzgerald, E. T. Morris
Garrow, D. M. Graceville
Giesen, A. F. Starbuck

Karn, B. R. Ortonville
Lindberg, A. L. Wheaton
Linde, Herman. Cyrus
McIver, B. A. Lowry
Mooney, L. P. Graceville
Nelson, M. C. Lowry
Oliver, C. I. Graceville
Oliver, I. L. Graceville
Ransom, M. L. Hancock
Shelver, H. J. Ortonville

WINONA COUNTY MEDICAL SOCIETY

Regular meetings, first Monday in January, April, July, October

Annual meeting, first Monday in January

Number of Members: 26

inert, A. E. Winona
Secretary
einer, I. W. Winona
noit, F. T. Winona
ristensen, E. E. Winona
awford, H. L. Winona
ise, W. F. C. Winona

Keyes, J. D. Winona
Lichtenstein, Hans. Winona
Lindsay, W. V. Winona
Mattison, P. A. Winona
McLaughlin, E. M. Winona
Meinert, A. E. Winona
Nauth, W. W. Winona
Neumann, C. A. Winona
Nilles, L. J. Rollingstone
Page, R. L. St. Charles
Risser, E. D. Winona

Robbins, C. P. Winona
Roemer, H. J. Winona
Roth, F. D. Lewiston
Satterlee, H. W. Lewiston
Schaefer, Samuel. Winona
Steiner, I. W. Winona
Tweedy, G. J. Winona
Tweedy, R. B. Winona
Walker, G. H. Winona
Wilson, R. H. Winona
Younger, L. I. Winona

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

WRIGHT COUNTY MEDICAL SOCIETY

Regular meeting, Quarterly, first Tuesday after first Monday

Annual meeting, October

Number of Members: 17

President
Anderson, W. P.....Buffalo

Secretary
Catlin, J. J.....Buffalo
Anderson, W. P.....Buffalo

Bendix, L. H.....Annandale
Catlin, J. J.....Buffalo
Catlin, T. J.....Buffalo
Ellison, F. E.....Monticello
Grundset, O. J.....Montrose
Harriman, L.....Howard Lake
Hart, W. E.....Monticello
Hoyer, L. J.....Howard Lake

Lee, J. L.....Watertown
Peterson, O. L.....Coka
Phillips, A. E.....Delar
Ridgway, A. M.....Annandale
Roholt, C. L.....Waver
Rousseau, Victor.....Maple Lake
Swezey, B. F.....Buffalo
Thompson, Arthur.....Coka

ALPHABETIC ROSTER

es, A. M.	Red Wing	Baker, C. P.	Rochester	Blanchard, H. G.	Fairmont
ott, J. S.	St. Paul	Baker, E. L.	Minneapolis	Blaustone, H. H.	Minneapolis
arn, W. H.	Hawley	Baker, G. S.	Rochester	Blegen, H. M.	Warren
ams, B. S.	Hibbing	Baker, H. R.	Hayfield	Blomberg, W. R.	Princeton
ms, L. P.	St. Cloud	Baker, Looe	Minneapolis	Blum, B. B.	Rochester
ms, R. C.	Bird Island	Baker, N. H.	Fergus Falls	Blumenthal, J. S.	Columbia Heights
ms, R. C.	Rochester	Baker, R. L.	Hayfield	Boardman, D. V.	Twin Valley
ay, E. R.	Gilbert	Baker, T. W.	Rochester	Bock, R. A.	St. Paul
ins, C. M.	Thief River Falls	Balfour, D. C.	Rochester	Boeckmann, Egil	St. Paul
ins, G. H.	Grygla	Bannick, E. G.	Rochester	Boehme, E. J.	Minneapolis
on, A. W.	Rochester	Barber, J. P.	Minneapolis	Bofenkamp, F. W.	Luverne
ldt, D. E.	Kasson	Bardon, Richard	Duluth	Bohl, G. W.	Ada
ens, A. E.	St. Paul	Bargen, J. A.	Rochester	Bohland, E. H.	St. Paul
ens, A. H.	St. Paul	Barker, N. W.	Rochester	Boies, L. R.	Minneapolis
ens, R. S.	Minneapolis	Barnes, A. R.	Rochester	Bolender, H. L.	St. Paul
ens, H. B.	Le Center	Barney, L. A.	Duluth	Boleyn, E. S.	Stillwater
ns, W. M.	Eveleth	Barr, L. C.	Albert Lea	Boline, C. A.	Battle Lake
arts, M. W.	St. Paul	Barr, W. H.	Wells	Bolsta, Charles	Ortonville
en, J. F.	St. Paul	Barringer, P. E.	St. Cloud	Boman, P. G.	Duluth
xander, F. H.	St. Paul	Barron, Moses	Minneapolis	Bong, J. H.	Jasper
xander, H. A.	Minneapolis	Barry, L. W.	St. Paul	Booth, A. E.	Minneapolis
ig, C. A.	Minneapolis	Barness, Nellie	St. Paul	Boothby, W. M.	Rochester
ig, C. P.	Minneapolis	Basinger, H. P.	Windom	Boquist, E. T. W.	Minneapolis
n, A. W.	Austin	Basinger, H. R.	Mountain Lake	Boreen, C. A.	Minneapolis
n, C. C.	Austin	Bass, G. W.	Minneapolis	Borg, J. F.	St. Paul
n, E. V.	Rochester	Bates, B. V.	Browns Valley	Borgerson, A. H.	Sebeka
n, H. W.	Minneapolis	Batts, Martin, Jr.	Rochester	Borgeson, E. J.	Minneapolis
son, R. G.	Minneapolis	Baxter, S. H.	Minneapolis	Borreson, Baldwin	Thief River Falls
ow, H. O.	Minneapolis	Bayard, H. F.	Minneapolis	Bosland, H. G.	Verndale
arez, W. C.	Rochester	Bayley, E. C.	Lake City	Bossert, C. S.	Mora
berg, Samuel	Rochester	Beadie, W. D.	Cannon Falls	Bossingham, O. N.	Lake Benton
undson, A. E.	Little Falls	Beals, Hugh	St. Paul	Bouma, L. R.	St. Paul
ersen, A. G.	Minneapolis	Beard, A. H.	Minneapolis	Bouman, H. A. H.	Minneapolis
ersen, S. C.	Minneapolis	*Beard, R. O.	Minneapolis	Bouquet, B. J.	Wabasha
erson, C. E.	Brainerd	Beckering, Gerrit	Edgerton	Bowen, R. L.	Hibbing
erson, C. M.	Rochester	Beckman, W. G.	Minneapolis	Bowers, J. T.	Bemidji
erson, D. D.	Minneapolis	Bedard, R. E.	Rochester	Bowing, H. H.	Rochester
erson, E. D.	Minneapolis	Bedford, E. W.	Minneapolis	Boyd, L. M.	Alexandria
erson, E. R.	Minneapolis	Beede, E. R.	Faribault	Boyer, S. H., Jr.	Duluth
erson, F. J.	Minneapolis	Beek, H. O.	St. Paul	Boyer, S. H., Sr.	Duluth
erson, J. K.	Minneapolis	Behmer, F. W.	Morris	Boynton, Ruth	Minneapolis
erson, K. W.	Minneapolis	Behrend, Albert	Rochester	Boysen, Herbert	Welcome
erson, L. W.	Atwater	Beise, R. A.	Brainerd	Boysen, Peter	Pelican Rapids
erson, M. J.	Rochester	Beiswanger, R. H.	Wykoff	Braasch, W. F.	Rochester
erson, P. A.	Minneapolis	Bell, C. C.	St. Paul	Bracken, H. M.	Claremont, Calif.
erson, R. E.	Willmar	Bell, E. T.	Minneapolis	Brand, G. D.	St. Paul
erson, S. H.	Red Wing	Belote, G. B.	Caledonia	Brand, W. A.	Redwood Falls
erson, U. S.	Austin	Belzer, M. S.	Minneapolis	Branham, D. S.	Albert Lea
erson, W. P.	Buffalo	Bendix, L. H.	Anandale	Branton, A. F.	Willmar
erson, W. S.	Minneapolis	Benedict, W. L.	Rochester	Branton, B. J.	Willmar
ressen, E. C.	Minneapolis	Benep, J. L.	St. Paul	Bratrud, A. F.	Minneapolis
rews, R. N.	Mankato	Benham, E. W.	Mankato	Bratrude, O. E.	Thief River Falls
rews, R. S.	Minneapolis	Benjamin, A. E.	Minneapolis	Bratrude, E. J.	St. James
nis, H. B.	Minneapolis	Benjamin, E. G.	Minneapolis	Braverman, N. J.	Duluth
nis, J. W.	Rochester	Benjamin, H. G.	Minneapolis	Bray, C. W.	Biwabik
her, G. F., Jr.	Rochester	Benjamin, W. G.	Pipestone	Bray, E. R.	St. Paul
nds, A. L.	Askov	Renn, F. G.	Minneapolis	Bray, P. N.	Duluth
y, S. L.	Excelsior	Bennion, P. H.	St. Paul	Breck, L. W.	Rochester
lander, C. E.	Minneapolis	Benoit, F. T.	Winona	Bregel, F. L.	St. James
nstrong, E. L.	Duluth	Benson, K. W.	Rochester	Brekke, H. J.	Minneapolis
nstrong, J. M.	St. Paul	Bentley, N. P.	St. Paul	Brey, F. W.	Wabasso
nstrong, T. D.	Rochester	Berdez, G. L.	Duluth	Brick, E. B.	Minneapolis
ndt, H. W.	Frazee	Bergan, Otto	Clinton	Briggs, J. F.	St. Paul
neson, A. T.	Morris	Berge, D. O.	Roseau	Brigham, C. F.	St. Cloud
nold, D. C.	Minneapolis	Berger, A. G.	Minneapolis	Brigham, Frank	Watkins
nold, E. W.	Adrian	Bergh, L. N.	Montevideo	Brink, A. A.	Baudette
nquist, A. S.	St. Paul	Berghheim, M. C.	Hawley	Brink, J. R.	Rochester
nson, J. M.	Benson	Berghs, L. V.	Owatonna	Broders, A. C.	Rochester
ny, F. P.	Preston	Bergman, O. B.	St. James	Brodie, W. D.	St. Paul
nvidson, C. G.	Minneapolis	Bergquist, K. E.	Battle Lake	Broker, W. S.	Battle Lake
ns, A. G.	Duluth	Berkman, D. M.	Rochester	Brooks, C. N.	Minneapolis
ine, Martin	Minneapolis	Berkman, J. M.	Rochester	Brooks, G. F.	Stillwater
rand, W. H.	Minneapolis	Berkwitz, N. J.	Minneapolis	Brown, A. E.	Rochester
relius, J. R.	St. Paul	Bernstein, W. C.	New Richland	Brown, A. H.	Pipestone
rsman, C. F.	St. Paul	Berrisford, P. D.	St. Paul	Brown, E. D.	Minneapolis
try, D. H.	Rochester	Bertelson, O. L.	Crookston	Brown, E. I.	St. Paul
ry, J. F.	La Jolla, Calif.	Bessesen, A. N., Jr.	Minneapolis	Brown, E. J.	Minneapolis
res, G. T.	Ely	Bessesen, D. H.	Minneapolis	Brown, J. C.	St. Paul
		Bessesen, W. A.	Minneapolis	Brown, L. L.	Crookston
		Betlach, C. J.	Rochester	Brown, P. W.	Rochester
		Beuning, J. B.	Albany	Brown, R. W.	Cambridge
		Bianco, A. J.	Duluth	Brownstone, Manuel	Sandstone
		Bieck, J. F.	St. Paul	Brunsting, H. A.	Rochester
		Biedermann, Jacob	Thief River Falls	Brunsting, L. A.	Rochester
		Bielow, C. E.	Dodge Center	Brusegard, J. F.	Red Wing
		Billings, R. E.	Franklin	Brutsch, G. C.	Minneapolis
		Binet, H. E.	Grand Rapids	Bryant, F. L.	Minneapolis
		Binger, H. E.	St. Paul	Bryant, O. R.	Minneapolis
		Binger, M. W.	Rochester	Buchstein, H. F.	Rochester
		Birge, H. L.	Rochester	Buchtel, H. A.	Rochester
		Birnberg, T. L.	St. Paul	Buck, F. H.	Shakopee
		Black, William	Mankato	Buckley, R. P.	Duluth
		Blacklock, S. S.	Hibbing	Buie, L. A.	Rochester
		Blake, James	Hopkins	Bulinski, T. J.	St. Paul
		Blake, T. W.	Rochester	Bulkley, Kenneth	Minneapolis
		Blakely, C. C.	Barnum	Bullard, M. J.	Minneapolis
		Blakey, A. R.	Osakis	Burch, F. E.	St. Paul

*Deceased

ROSTER MINNESOTA STATE MEDICAL ASSOCIATION

Burnap, W. L. Fergus Falls
Burns, F. M. Milan
Burns, H. A. Ah-Gwah-Ching
Burns, H. D. Albert Lea
Burns, M. A. Milan
Burns, R. L. Two Harbors
Burns, R. M. St. Paul
Burton, C. G. St. Paul
Buscher, J. C. St. Cloud
Busher, C. H. St. Paul
Bussey, C. D. Rochester
Butsch, W. L. Rochester
Butler, John Minneapolis
Butt, H. R. Rochester
Butturff, C. R. Freeborn
Butzer, J. A. Mankato
Buzzelle, L. K. Minneapolis
Byram, J. W. Young America

Cable, M. L. Minneapolis
Cabot, Hugh Rochester
Cabot, V. S. Minneapolis
Cady, L. H. Minneapolis
Caine, C. E. Morris
Caldwell, J. P. St. Paul
Calhoun, F. W. Albert Lea
Callahan, F. F. Pokegama
Callerstrom, G. W. Minneapolis
Cameron, Isabell Minneapolis
Camp, J. D. Rochester
Camp, W. E. Minneapolis
Campbell, L. M. Minneapolis
Campbell, O. J. Minneapolis
Campbell, R. W. Cass Lake
Campbell, S. J. Rochester
Cantwell, W. F. International Falls
Cardle, A. E. Minneapolis
Cardle, G. E. Ah-Gwah-Ching
Carey, J. B. Minneapolis
Carlson, C. E. Aitkin
Carlson, H. A. Minneapolis
Carlson, J. V. Westbrook
Carlson, Lawrence Minneapolis
Carlson, L. T. Rochester
Carlson, V. W. Minneapolis
Carman, J. E. Detroit Lakes
Carmichael, F. A., Jr. Rochester
Caron, R. P. Minneapolis
Carroll, W. C. St. Paul
Carstens, C. F. Hibbing
Catin, J. J. Buffalo
Catlin, T. J. Buffalo
Cavanor, F. T. Minneapolis
Cervenka, C. F. New Prague
Chadbourne, A. G. Heron Lake
Chadbourne, C. R. Janesville
Chambers, W. C. Blue Earth
Chapman, T. L. Duluth
Chatterton, C. C. St. Paul
Cheney, E. L. Duluth
Chesley, A. J. Minneapolis
Chessen, James Duluth
Chew, E. M. Rochester
Childrey, Edgar, Jr. Rochester
Christensen, E. E. Winona
Christensen, E. P. Two Harbors
Christenson, G. R. Minneapolis
Christiansen, A. St. Paul
Christianson, H. W. Minneapolis
Christison, J. T. St. Paul
Chunn, S. S. Pipestone
Clagett, O. T. Rochester
Clark, F. F. Duluth
Clark, H. B. St. Cloud
Clark, H. B., Jr. St. Paul
Clark, H. H. Edgerton
Clark, H. S. Minneapolis
Clark, L. W. Spring Valley
Clark, R. L., Jr. Rochester
Clark, T. C. Minneapolis
Claydon, D. R. Red Wing
Claydon, H. F. Zumbrota
Claydon, L. E. Red Wing
Clement, J. B. Lester Prairie
Clement, T. G. Duluth
Clement, W. B. Shakopee
Cleveland, W. H. Rochester
Clifford, G. W. Osakis
Clifton, T. A. Chatfield
Cochrane, W. J. Lake City
Coffey, R. J. Rochester
Cohen, S. S. Oak Terrace
Colby, Woodard St. Paul
Cole, H. B. Redwood Falls
Cole, J. G. Redwood Falls
Cole, W. H. St. Paul
Collie, H. G. St. Paul
Collins, A. N. Duluth
Collins, H. C. Duluth

Collins, J. S. Wabasha
Colvin, A. R. St. Paul
Combacker, L. C. Fergus Falls
Comfort, M. W. Rochester
Condit, W. H. Minneapolis
Conner, H. M. Rochester
Connor, C. E. St. Paul
Cook, C. K. St. Paul
Cook, E. N. Rochester
Cook, H. W. Minneapolis
Cook, J. M. Staples
Cooney, H. C. Princeton
Cooper, M. D. Winnebago
Cooperman, H. O. Minneapolis
Corbett, J. F. Minneapolis
Cornica, A. D. Minneapolis
Corrigan, J. E. Spooner
Corwin, W. C. Rochester
Cosgriff, J. A. Bird Island
*Cosman, E. O. Minneapolis
Cottam, Gilbert Minneapolis
Counseller, V. S. Rochester
Countryman, R. S. St. Paul
Covell, W. W. St. Peter
Coventry, W. A. Duluth
Coventry, W. D. Duluth
Cowern, E. W. North St. Paul
Crafts, L. M. Minneapolis
Cragg, R. W. Rochester
Craig, W. McK. Rochester
Cranmer, R. R. Minneapolis
Cranston, R. W. St. Louis Park
Crawford, H. L. Winona
Creedy, C. D. Minneapolis
Creighton, R. H. Minneapolis
Crenshaw, J. L. Rochester
Cress, E. E. Boyd
Cress, P. J. Ellsworth
Crewe, J. E. Rochester
Critchfield, L. R. St. Paul
Cronwell, B. J. Austin
Crow, E. R. Arlington
Culligan, J. M. St. Paul
Culver, L. G. Thief River Falls
Cumming, J. F. Morris
Curtin, J. F. Minneapolis
Curtis, R. A. Le Center
Cusick, P. L. Rochester
Cutler, H. H. Rochester
Cutts, George Minneapolis
Cutts, R. E. Minneapolis

Dack, L. G. St. Paul
Dady, E. E. Minneapolis
Dahl, E. O. Minneapolis
Dahl, G. A. Mankato
Dahl, J. A. Minneapolis
Daignault, Oscar Benson
Daniel, D. H. Minneapolis
Daniel, L. M. Minneapolis
Danielson, K. A. Litchfield
Danielson, Lennox Litchfield
Dart, L. O. Minneapolis
Daugherty, E. B. St. Paul
Daugherty, L. E. St. Paul
Davenport, L. H. Rochester
Davis, A. C. Rochester
Davis, B. F. Duluth
Davis, F. U. Faribault
Davis, Herbert St. Paul
Davis, I. G. Rushford
Davis, J. C. Minneapolis
Davis, L. T. Wadena
Davis, R. D. Clearbrook
Davis, T. C. Wadena
Davis, William St. Paul
Day, L. A. Rochester
Dearing, W. H., Jr. Rochester
DeBoer, Hermanus Edgerton
Dedolph, Karl St. Paul
Dedolph, T. H. Brahm
Deeds, C. D. Rochester
Delavan, P. A. St. Paul
Delmore, J. L. Roseau
del Plaine, C. W. Minneapolis
Demo, P. W. Wells
Denman, A. V. Mankato
Derauf, B. J. St. Paul
Desjardins, A. U. Rochester
Devereaux, T. J. Wayzata
Dewey, D. H. Owatonna
Dickson, T. H., Jr. St. Paul
Diehl, H. S. Minneapolis
Diessner, H. D. Minneapolis
Dietrich, F. S., Jr. Rochester
Dittman, G. C. St. Paul
Dixon, C. F. Rochester
Doering, R. E. Minneapolis
Dolan, C. P. Worthington
Dolder, F. C. Eyota
Doleman, N. F. Tintah

Doman, V. W. Lakefi
Doms, H. C. Slay
Donaldson, C. S. Fo
Donohue, P. F. St. P
Donovan, D. L. Albert I
Doollittle, L. E. Duluth
Dordal, J. Sacred He
Dorge, R. I. Minneapo
Dornblaser, H. B. Minneapo
Dorsey, G. C. Minneapo
Dovre, C. M. St. P
Dowswell, W. J. Kerkhov
Doxey, G. L. Minneapo
Doyle, G. C. Duluth
Doyle, L. O. Minneapo
Drake, C. B. St. P
Drake, C. R. Minneapo
Drake, F. A. Lanesbo
Dredge, H. P. Sandsto
Drenning, F. C. Duluth
Drill, H. E. Hopki
Drips, D. G. Roches
Drought, W. W. Fergus Fa
Dry, T. J. Roches
Dubbe, F. H. New U
DuBois, J. A. Sauk Cent
DuBois, J. F. Sauk Cent
Dudley, J. H. Winde
Duff, E. R. Minneapo
Dugan, L. F. Fariba
Dukelow, D. A. Minneapo
Dulude, S. S. Das
Dumas, A. G. Minneapo
Duncan, J. W. Moorhe
Dungay, N. S. Northfi
Dunlap, E. H. Minneapo
Dunn, G. R. Minneapo
Dunn, J. N. St. Pa
Duryea, W. M. Minneapo
Dutton, C. E. Minneapo
Dvorak, B. A. Minneapo
Dwan, P. F. Minneapo
Dworsky, S. D. Minneapo
Dysterheit, A. F. Gaylo

Earl, G. A. St. Pa
Earl, Robert St. Pa
Eaton, L. McK. Rochest
Eberlin, E. A. Glenwo
Ecker, A. D. Rochest
Eckman, P. F. Duluth
Eckman, R. J. Duluth
Ederer, J. J. Mahnomo
Edlund, G. St. Pa
Edstrom, Henry Dubuque, Iov
Edwards, G. C. Grove Ci
Edwards, J. W. St. Pa
Edwards, R. T. Elysi
Edwards, T. J. St. Pa
Ehrenberg, C. J. Minneapo
Ehrlich, S. P. Minneapo
Eich, Matthew Minneapo
Eiler, John St. Bonifac
Eisenstadt, D. H. Minneapo
Eitel, G. D. Minneapo
Ekblad, J. W. Duluth
Eklund, E. J. Norwoc
Eklund, W. J. Duluth
Elias, F. J. Duluth
Elkins, E. C. Rochest
Ellingson, A. R. Detroit Lak
Ellison, D. E. Minneapo
Ellison, F. E. Monticel
Eley, E. M. Glenwo
Eley, J. R. Glenwo
Ely, O. S. South St. Pa
Emanuel, K. W. Duluth
Emerson, E. C. St. Pa
Emmerson, W. S. Mayo
Emmett, J. L. Rochest
Endress, E. K. St. Pa
Engberg, E. J. St. Pa
Engdahl, F. W. Grand Rapi
Engh, Sigfred Jackso
Engstrand, O. J. Minneapo
Engstrom, G. F. Belgrac
Eppard, R. M. Cloque
Erdmann, C. A. Minneapo
Erich, J. B. Rochest
Erickson, C. W. Rochest
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PROMPT REPORTING AND COOPERATION WITH COMMISSIONS*

VOYTA WRABETZ

Chairman, Industrial Commission of Wisconsin

Madison, Wisconsin

THE major part of the burden caused by industrial accidents is an obligation which must be borne by industry. This proposition is no longer seriously questioned. Upon this principle benefits for disability or death because of accidents (and in some states because of occupational diseases) which arise out of and in the course of employment are the inherent right of workmen and are not philanthropy or charity to be doled out by a benevolent employer.

As an assurance that such benefits shall be adequately provided, workmen's compensation laws were enacted. To carry out the underlying theory of the laws completely and at the same time to stay within the law, the proper and reasonable administration of the law by Industrial Accident Boards or Commissions, by employers, by insurance carriers and especially by the medical profession, is absolutely necessary.

The workmen's compensation act of any state provides two-fold benefits: (1) competent and reasonably necessary medical, surgical and hospital treatment, and (2) compensation to the disabled employe or death benefits to the dependents of a deceased employe. While the payment of compensation is the most apparent purpose of the law, the primary effect of the law is that by the burden of its obligations it supplies the urge to prevent industrial accidents and to avoid those conditions of employment which cause industrial diseases.

A second primary purpose of the compensation law and one that is also more important than the payment of compensation, is the phys-

ical restoration of the disabled employe. The return to a self-sustaining, and when possible, to full earning capacity, is of tremendously greater value to a worker than any amount of compensation benefits that might be paid. It is, therefore, self-evident that the medical profession is a controlling factor in a compensation case because proper and sufficient medical treatment is of first importance in the process of rehabilitation. The speed with which medical treatment is rendered and the more proficient and skillful the medical attendance which is furnished, the more complete will be the attained rehabilitation.

Workmen's compensation laws usually place the cost of medical attendance and treatment upon the employer. In many states, because of this obligation, the employer is granted the right to name a panel of doctors from which the employe may select the physician or surgeon who shall treat and attend him. This provision operates, at least to some extent, to take from the injured employe the age-old privilege of selecting the physician who is to attend him and, to the same degree, to give to the employer the choice of the physician in whose care the employe is placing not only the repair of broken limbs, but of life itself.

There are certain well-founded reasons for giving to the employer and placing upon him the responsibility of furnishing proper medical attendance for the care of the injured. First, the employer, for purely selfish reasons, is interested in the speedy recovery of the employe with the least possible permanent disability in order to reduce compensation costs. For this reason, if for no other, the employer is more likely to

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provide the best available medical treatment. Second, the injured man sustains a disabling injury usually not more than once in his lifetime and because of this lack of contact does not possess knowledge as to the qualifications of physicians or surgeons. On the other hand, the employer of even as few as from fifteen to fifty workers, generally has better knowledge of the specialties and qualifications of available physicians and surgeons. Consequently he is in a position, not only to furnish medical treatment promptly, but, because of experience, is able to secure the care and treatment which each particular case demands.

While as indicated, the employer has much to do with the selection of the physician or surgeon for the care of an industrial injury or disease, in these states there still remains some choice on the part of the employe. He need not accept the service of one doctor if that doctor is the only one offered unless no other is available in the community. The employer is required to present the employe with a panel of names from which a choice may be made.

Because of the progress which has been made in industrial surgery and because more and more doctors have given much of their time and study to a better understanding of the problems involved, this provision of the compensation law is being invoked less than formerly. Today, it is the rule rather than the exception, that the employe is permitted to engage the services of any doctor without the intervening tender of a panel.

Because of these various considerations and even in states in which the employe may freely choose his doctor, the position of the physician under the workmen's compensation law is unique. The relationship of a physician to his patient is one of the most confidential of relationships in human life and has always been treated as an exclusive privilege. In cases of sickness or injury, in order to obtain the best results, a person must place himself in a position of complete dependence upon his physician. Therefore, the physician assumes a position of great responsibility; he has been selected, or is paid for his services, by one (the employer) to undertake the care of another (the employe). His duty is twofold: one to the injured who places in him all his hope and faith and the other to the employer

who pays him for his services. In view of this dual relationship, the physician is placed in a most unusual position and enjoys a privilege not possessed by any other class of men or profession. It is well, therefore, for the doctor to remember that, although he is paid for his services by the employer, he nevertheless is the employe's physician, because it is the employe who is to be adequately treated and adequately and fairly compensated.

The first consideration which the attending physician should give in the treatment of his case, is to give that treatment which is most likely to result in the best possible physical restoration. To this end the old adage that two heads are better than one has special application. In serious cases where there is question as to what ought to be done or when the case may be out of the field of the experience of the attending physician, consultation is desirable. Under such circumstances, the advice of another physician, and, more particularly, of a specialist should be sought and, when tendered by the employer or insurance carrier, should be welcomed without any thought of the attending physician being subordinated in the case.

As a definite part of treatment in order to accomplish speedier and more complete rehabilitation, the facilities of curative workshops may be valuable. It is my experience that these workshops have materially reduced the periods of temporary total disability and have also lowered the amount of ultimate permanent impairment. Of course, physiotherapy should always be done under the direction of a physician. Under such proper direction, the physician should make use of any well-equipped workshop if reasonably available.

The attending physician plays a most important rôle and has a very important duty to perform at the end of the healing period. In view of the fact that compensation benefits are only a fraction of the actual wages of an injured man, it is extremely important to the injured himself that he return to work as soon as possible to stop the daily loss represented by the difference between his full wage earnings and what he gets as compensation. The early return to work is likewise important to the employer who is meeting the compensation liability. It is this point over which there arises considerable controversy be-

between the injured employe and the employer or the employer's insurance carrier.

The surgeon should always have this crucial time in mind in the treatment of his case. The injured has, up to this time, not only suffered the pains of his injury, but has himself suffered from the loss of a full pay envelope, sometimes resulting in the curtailment of even the necessities of life, not only for himself, but for his entire family. At this moment in his life, he is not particularly happy because he is thinking of a return to work with his new handicap and with many limitations. In order to meet this crisis in the care and treatment of the injured man, it is vital that the attending physician truly gain the confidence of his patient, that confidence which a patient gives to a private surgeon. It becomes, therefore, apparent that in the handling of a case the surgeon must convince the employe of his complete fairness and impartiality. If he has shown in his conduct that his interest is in his patient, the employe will, ordinarily, take his advice and the return to work will be accomplished as an incident of treatment.

When an injured employe returns to work, the physician owes two definite obligations. The first is to the injured employe. The worker should be definitely advised not only as to the class of work he is able to do for wage earning purposes but, more particularly, the kinds of work it will be well for him to refrain from and also the kinds of work actively to engage in, in order to bring about the best possible rehabilitation. The physician's second duty is to give the same instructions, most emphatically, to the employer, either directly or through a representative of the insurance carrier. In this respect the foreman in whose charge the injured employe's work is done, should be impressed with the fact that a man who has been injured and who consequently has some handicaps and limitations is now back at work and that he must do everything necessary to complete the treatment of the case under the supervision of the attending physician. The injured employe should not be required, upon return to work, to fight his battle alone, not only with his own aches and pains, but with the foreman who may not be entirely in sympathy with him and who does not want him, a physically unfit man, in the plant. Too often the attending physician makes a re-

port of the end of the healing period to the agency which pays compensation and leaves the adjustment of the injured to employment to the hazard of misunderstanding, both from the standpoint of the injured and the foreman. It frequently occurs that an injured man is not told by his attending physician that he is able to return to work, nor is any report made to the employer or insurance company of the kind of work which the injured can do. The situation then becomes ripe for an argument and a subsequent contested case. Much can be done to bring about not only a harmonious relationship between the injured and his employer, but also a proper termination of the period of temporary total disability and a proper adjustment of compensation for such disability by a frank expression, both to the injured employe and to the employer.

Under all compensation laws, an injured employe is required to resume some suitable form of work as soon as he can. The mere healing of wounds does not terminate the so-called "healing period" and before the physician leaves his case he should be able to convince his patient that he is able to resume the form of work available to him, taking into account the kinds of work he was able to do before his injury. If he has maintained that proper attitude which the ethics of his profession towards the sick and infirm requires, he will be able to accomplish this end. In most cases, of course, the injured has been away from work for a long period of time and it is difficult for him to resume work, even aside from the disability that results directly from the injury. This, together with the actual physical defects, makes it doubly hard for the injured to return to work and in such cases it is usually well to advise the lengthening of the period of temporary total disability for several weeks and sometimes, as a rehabilitation measure, even when the employe has actually returned to work.

I trust it may not be out of place at this point for a layman to give a word of caution as to the handling of certain cases, namely, the possibility of neurosis following an injury. Needless to say, a true neurosis, while it is a result of some quirk of mental reaction, is nevertheless real. This condition almost always presents a difficult and pitiable case for solution. A sad feature of the case is the fact that often the condition

is brought about by some indiscreet suggestion from those who have the injured employee's interests most at heart and, yes, even by attending or examining physicians. Doctors knowing the possibilities of the development of a neurosis, can do much in their contacts with the injured and with members of his family to reduce the toll in this regard. Here again the building up of complete confidence in the ability and, especially, in the integrity of the attending physician plays an important rôle.

The compensation law provides for the payment of compensation not only during the period of temporary total disability, but also for permanent disability. In the determination of such permanent disability, all interested parties must depend upon the opinion of the physician. While it may be true that laymen and particularly members of an accident board or commission and those who have to do with the administration of compensation laws acquire some knowledge as to the kinds of disabilities that follow from certain injuries, in the last analysis the determination of just what disabilities are sustained is peculiarly in the field of the medical profession.

The purpose of the compensation law is to give to the injured employee such benefits that he shall be adequately compensated for the disability occasioned by injury. The man who has been injured is not in a position to face the world in a happy mood and particularly so if compensation paid to him does not in a reasonable degree compensate for the disability sustained. When this important question to the employee is being considered, the surgeon should not forget that he is still the physician of a particular patient and in estimating disabilities should never take into account the fact that he is being paid for his services by another agency.

Human beings are usually fairly optimistic and particularly so when it comes to judging the results of their own acts. If we have pride in our work, and we ought to have, we are apt to think that our work probably could not be improved upon. Therefore, may I add a word of caution and suggest that the surgeon should not be too sanguine in judging the results of his own work. The results may have been the best obtainable, but because they are the best obtainable, it does not follow that an injured member has been restored to perfect normality. Therefore, the sur-

geon should be particularly alert to be impartial and fair in rating or appraising the disability, so as to give the injured man all that he is entitled to.

It is always well for the medical men to become thoroughly familiar with the compensation law of the state in which they practice and particularly with its administration, so that their reports and opinions may have meaning. But in estimating disabilities, the surgeon should never take into account the amount of money which is to be paid, but rather should give his estimate of disability and "let the chips fall where they may." Estimates of disability should always be based upon the ultimate result attained after the return to work.

At this point, it might be of interest to point to other facts which show that the medical aspect of any workmen's compensation act is very important. These facts are of particular interest and importance to physicians and surgeons as participants in this phase of the law.

In the administration of the workmen's compensation law, all compensable cases are required to be reported. These reports include a statement of the entire medical costs involved. In Wisconsin, from September 1, 1911, to December 31, 1935, in the 396,379 cases reported, employers have paid \$18,779,395 for medical, surgical and hospital treatment. These figures do not include the many thousands of cases which involve less than three days disability but which required medical treatment. While we do not have a record of such cases, the medical costs were undoubtedly large.

I have heard that employers have criticized the medical profession, feeling that some doctor step up their bills under the system where payment is more certain because made by an insurance company. Medical bills have increased per case for a number of years as shown by the fact that in 1920 the average per case was \$35, in 1925 it was \$52, in 1930, \$70, while in 1935 it was \$50. The drop in 1935 is probably due to the fact that there was a decline in employment in the heavy industries during that period and consequently a reduction in the number of more serious accidents. While in some isolated case the complaints may be well founded, I believe that the criticisms generally are not warranted and that the increase is due to the fact that bet-

medical service is being given, resulting in shorter periods of disability and in more nearly complete restoration of injured employees.

I now wish to discuss briefly compensation payable under the schedules contained in some compensation laws, as in Minnesota and Wisconsin. These schedules usually include amputations of various members or their parts and the loss of vision and hearing. Any injury short of amputation is compensated for on the basis of a relative loss. This means that the loss is estimated as being a certain percentage of the allowance as contained in the schedule for the next higher rated disability. For instance, a disability which is limited entirely to the function of the forearm from the elbow to the tips of the fingers is one comparable to the loss of an arm at the elbow and not to the loss of an arm at the shoulder.

While no general rules can be laid down for estimating of the loss of function, there are certain injuries, or rather conditions, which are more or less classical, such as the ankylosis of a knee joint, or a definite shortening of a leg. But even such conditions in different persons result in some variation in the percentage of loss of function, depending upon the adaptability of the patient. It is clear that some men with an inch shortening of one leg are unable to overcome the handicap, while others go about their work without any apparent increase of effort whatever.

Within limitations, it is possible to establish by custom or rule the related disability applicable to a given handicap. The Industrial Commission of Wisconsin, after many hearings with physicians and in coöperation with the State Medical Society, adopted a schedule of related disabilities to serve as a guide in rating disabilities. For example, a loss of function represented by a limitation of active elevation of the arm in all directions to 90°, but otherwise normal, is a loss of 20 per cent of the arm at the shoulder. If other conditions exist, the percentage of disability varies more or less as the disability varies from this standard.

This schedule has served a very useful purpose and has resulted in a better common understanding of what is meant by relative losses. It has resulted in a more uniform approach to the problem of rating or evaluating of disabilities.

Less than 15 per cent of all cases under compensation in Wisconsin are actually heard by the Industrial Commission; that is, less than 15 per cent result in disagreement as to the causal relationship between working conditions and disability or in the estimating of disability. In the remaining 85 per cent, the cases are closed upon the reports filed with the commission. When an injury occurs, the employer is required to file with the commission a report which contains answers to questions relating to the injury. When the case is finally closed, a final report must be filed by the employer together with a receipt signed by the employee. If the disability extends beyond three weeks, a physician's report showing the character of the injury and the disability sustained, both temporary and permanent, must also be filed. With these reports before it, the commission determines whether the injured is properly compensated. If all four documents are in agreement, the case is closed. The practice in many states is somewhat similar. In this plan of administration, you will readily see the importance of physicians' reports. The whole question of whether injured men are being properly compensated rests almost exclusively upon the judgment of physicians and, therefore, it is essential that such reports be carefully prepared, that they be complete and competent, so that the beneficent purposes of compensation laws may be fully carried out.

One of the principal reasons for the enactment of a compensation law was to provide for the speedy payment of compensation. Since an employer or insurance carrier cannot be expected to pay compensation unless they are reasonably sure that compensation is due, it is extremely important that the attending physician make immediate report to the employer or insurance company after first being called on the case, setting forth the nature of the injury and the probable period of disability. While the record of prompt payment of compensation is good, it certainly can be improved upon. A frequent reply to an inquiry made to an insurance company as to why compensation payments are not made promptly, is that it has not received and cannot get a report from the attending physician. In fairness to injured workmen, this should not be. I am sure that if attending physicians realize the importance of prompt and complete reports, they

will coöperate in the plan of administration, so that the injured man, in addition to the suffering occasioned by injury, will not at the same time suffer from worry due to shutting off his income. For this very obvious and beneficent purpose, I cannot plead too forcefully or urgently to attending physicians to report their cases to proper agencies completely and understandingly.

Contested cases, which usually number about 15 per cent of all cases, naturally give boards or commissions the greatest worry and concern. The bulk of these cases can be classified into two divisions, the first covering the determination of temporary or permanent disabilities when injury definitely occurs and the second the determination of the question of whether or not the disability complained of is either the result of injury accidentally sustained or of occupational disease. In the determination of either of these questions, the determining body must depend almost entirely upon the testimony of the medical profession.

The first of these questions is not so difficult and becomes difficult only when physicians will not use good judgment either as the result of bias or other cause. When in a given case one physician estimates that a permanent disability is 10 per cent loss of function of a leg at the hip and another estimates the identical disability at 80 per cent of loss of the leg at the hip, some one or maybe both are wrong. A leg cannot be disabled both 10 per cent and 80 per cent at the same time.

Workmen have complained that doctors whose bills are paid by employers or insurance companies have discriminated unfairly against the workmen in under-estimating the degree of disabilities. Opposite complaints are made by employers against doctors who are employed by workers. There are doctors who apparently are influenced by the side for which they are reporting or testifying. Such "influenced" reports or testimony do not confer a favor upon anyone and least of all upon the insurance carrier, which must be guided only by the real facts in the case.

After some years of experience and after seeing probably as many if not more actual cases than any one physician may see, it would be strange indeed if those who administer compensation laws did not have some fairly good idea as to how disabilities should be measured. It is

soon discovered whether or not a physician is giving to the case that unbiased thought and study which enables him to estimate disabilities properly and fairly. Physicians who do not soon lose the confidence of the board or commission which must decide cases upon their testimony, and ultimately the confidence of their clients. Happily it can be said that members of the medical profession usually give honest judgments as to disabilities and that their estimates of disabilities are usually very close indeed.

The second field of controversy, which involves the question of whether or not the disability is the result of accident or occupational disease, offers more difficulty. As in the former class, boards or commissions must here likewise depend upon the medical profession. While medicine and surgery have made tremendous strides and particularly in the last half century there is still much which medicine and surgery have not solved and which they do not know so far as cause and effect are concerned. In the determination of such questions it is important that the physician, who is called as an expert to give the scientific knowledge on the subject under investigation. Opinions based purely on conjecture have no probative force, whether they be on the one side or the other. The fair and unbiased scientist in any given set of facts will always give the reasonable probabilities from which a determination can be made. Boards or commissions are no more justified in arriving at a conclusion based upon the remote conjecture in the face of scientific probability in the case of a medical question, than they would be in arriving at a conclusion based upon conjectural inferences as to any other fact. Fanciful theories, on the one hand, that a condition is not the result of a definite injury in the face of a definite chain of events, or, on the other hand, that a disability may be due to injury when more reasonable causative factors are present, are of no particular value in the determination of medical questions.

It must be recognized that in the present state of medical knowledge there is bound to be a difference of opinion when the etiology and character of the disability is obscure. It is this very feature that renders some industrial cases peculiarly fascinating. However, this difference of opinion should never degenerate into partiality.

hip. When it does, the physician ceases to be an impartial professional man and becomes an advocate, so that the value of his service to the administration of workmen's compensation laws becomes practically nil. For the purpose of determining medical issues, whether as a witness or when appointed to make an independent examination, it ought to be expected as a matter of course that the members of an old and honored profession will always give opinions really independent of their source of employment—fairly and impartially—and purely on the reasonable scientific probabilities applicable to the given situation.

If the foregoing analysis is correct, it must be apparent to all concerned in the administration of the compensation law, that its proper functioning depends largely upon the members of the medical profession. Because of the method of his selection, because the determination of compensation rights depends upon him,

and because he is exclusively responsible for the physical restoration and rehabilitation of the injured employe, the physician who engages in industrial surgery must be continually on the alert to maintain an absolutely unbiased and impartial attitude. The whole success of the compensation law depends upon him and the whole future of many thousands injured men each year depends not only on his skill, but upon his good judgment. It is to the great credit of the medical profession that compensation laws have generally worked out as successfully as they have. But "lest we forget," it is highly desirable that the medical profession shall steadily weed out its obnoxious members and that it shall ever be on the alert to keep its standards on a high level and, so far as the compensation laws are concerned, give to their administration that quality of judgment and attitude that will gain the fullest confidence of injured men and at the same time render to employers and to the public that impartial service to which they are entitled.

DIFFERENTIAL DIAGNOSIS IN ACUTE ABDOMINAL TRAGEDIES*

MAXWELL LICK, M.D.

Erie, Pennsylvania

HERE is nothing in medicine or surgery more dramatic than acute conditions within the abdomen. No drama moves more swiftly; no drama excites emotions to a higher pitch; no drama reaches its climax with greater speed than this calamitous and frequently cataclysmic event. No greater responsibility is ever borne than that by the chief actor in the piece, the physician.

The sufferer is frequently first seen under conditions unsatisfactory to the examiner. The light is poor, the bed is low, the room is small and is crowded with tearful, anxious relatives, among whom there is always one, with stern un-riendliness, who does not believe in hospitals or operations. All this often creates an atmosphere unconducive to calm, logical thinking and clear judgment.

Amid these conditions or even among those

advantageous ones of the hospital, the surgeon is confronted with a problem of diagnosis. It is usually fascinating, but all too often blurred and confusing. Is the condition surgical, or are the abdominal signs and symptoms but a red herring drawn across the trail to confuse the examiner and conceal the true condition? The experienced and cautious surgeon recalls to mind his scars as mementos to gastric crises and ureteral calculi. He remembers a professor who opened an abdomen for a ruptured ulcer, only to find nothing; but frank pneumonia was present the next day. Remembering these things, the intellect is thus sharpened and the mental acumen brought to a finer focus. But the surgeon is also cognizant that to overlook an abdominal condition carries as great a responsibility as to mistake it for something else. Acute conditions within the abdomen usually require prompt and immediate action. Conditions amenable to treatment and a resulting cure, if attacked at the proper time,

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are often converted by inaction and indecision into hopeless tragedies, thereby making the surgeon as impotent as though he were a little child.

In most cases a diagnosis can be made by the history and clinical examination alone. In this mechanical age physicians have learned to depend too much on instruments of precision. We are likely to subjugate our God-given senses of sight, touch, smell, and hearing, which were developed to a high degree by such men as Osler, Holmes, Agnew, and Murphy, to instruments of precision and laboratory findings. I cannot refrain from quoting, at this time, Thayer's paraphrase of Osler's advice to his students: "Observe, record, tabulate, communicate. Use your five senses. The art of the practice of medicine is to be learned only by experience; it is not an inheritance; it cannot be revealed. Learn to see, learn to hear, learn to feel, learn to smell, and know that by practice alone you can become expert. Medicine is learned at the bedside and not in the classroom. See and reason and compare and control. But see first. No two eyes see the same thing. No two mirrors give forth the same image. Let the world be your slave and not your master. Live in the ward."

Observation of the patient may speak volumes. The experienced clinician has learned to catch at a single glance the essential conditions of his patient as he walks into the room and many of us younger men have forgotten some of these old fashioned signs. Have you ever walked into a room and noted the patient slumped in bed following abdominal operation? Have you ever observed that he did not turn his head to look at you when you came into the room? That patient is sick. The weak voice is indicative of the vitality of a patient, as well as a weak pulse. I know, of course, that we offend our nurses when we do not look over their charts and observe the fine records they have kept for us. These records are not nearly as important as the observation of the patient. The expression on his face, the tone of the voice, the position in bed, the appearance of the tongue, old fashioned signs though they may be, are of utmost value in evaluating the condition of a patient. At a single glance one may get the impression of a peritoneal disease. The knees may be drawn up, the tongue coated, and the basin close by for vomitus; the facies may present an expression of

anxiety, suffering, and a sense of impending disaster. It is difficult to describe this expression but it can be recognized by the experienced. It is never absent in acute peritoneal condition. If one does not see this, he should be exceedingly wary in diagnosing an acute condition with the abdomen even though other signs seem conclusive. At times I have offended my confreres by refusing to open an abdomen which was rigid and painful because the patient looked too comfortable. He was out of balance with the abdominal signs. These cases almost invariably turn out to involve referred symptoms from the chest or diaphragm. Physicians are all familiar with the flushed cheek, the slight increase of respiration, the slight cough heard occasionally during the conversation, which should immediately excite the suspicion of a chest lesion regardless of the abdominal signs.

Perhaps all these things and more are caught at one glance before the story of the disease is elicited. The story is so important. Murphy said that if it were told correctly, the diagnosis would stand out as though written in large letters. The fault often lies with the physician who is hurried or impatient with a loquacious patient or his relatives. It takes cross-examination many times to get at the truth, to separate the inconsequential form that which is relevant. It can and should be done. The ruptured ulcer should give a history of previous digestive disorders quite different from that of the acute gall-bladder with its usual story of flatulent indigestion. In cases in which the picture is either that of subacute perforation or acute cholecystic disease, the ratio of ulcer is 3 to 1 for men, whereas that of gallbladder disease is just the reverse, being 3 to 1 for women.

Carcinoma of the large bowel with obstruction or perforation would be suspected in an elderly patient with an acute abdominal crisis whose history related blood in the stools and disturbance of bowel habit. A history of functional disturbance of the pelvic organs must not be dismissed as irrelevant merely because the abdominal signs do not conform to the textbook pattern. Physicians miss more things from not thinking than from not knowing. It is almost a truism that, if a diagnosis does not ring true, something unthought of will be found at operation.

Pain is probably the most constant and outstanding symptom of the acute abdomen. Pain is a clarion cry. It is nature's flashing signal that harm or injury is being done. It sends the mother, white-faced, to call the doctor when she hears the shrill cry of her sick child. A proper interpretation of pain alone may make a diagnosis certain.

It should be emphasized strongly that continued abdominal pain usually indicates a surgical condition. It must be asserted just as earnestly, however, that not all abdominal pain indicates abdominal disease. Those overflow pain impulses from the chest and diaphragm are not so severe. They disappear or are modified in a few hours. The corresponding signs and symptoms of acute abdominal disease are lacking or are not parallel. Tenderness is not commensurate with rigidity. The pulse rate is too slow. It does not have the quick, discourteous slap. The facies are more comfortable. This discrepancy and contradiction should be a warning, and observation should be practiced for a few hours. This can be carried too far in children. Late cases of appendicitis with local or spreading peritonitis usually show moisture in the lungs or other signs which blur the picture to one who is called to see the case late. The trajectory of the pain in coronary disease and angina pectoris frequently to the gallbladder. Nausea, vomiting, and local spasm of the recti muscles sometimes occur. The old, old story of "acute indigestion!" The cue here, of course, is the accompanying substernal pain, the dyspnea, the pain of the heart, the history of circulatory derangements, the absence of digestive disturbances in the foreground.

Everyone is familiar with those overflow pain impulses from the ureter or kidney which may simulate the most violent abdominal disease. The condition is well illustrated by a patient who was brought to the hospital in the night with poignant, colicky pain, nausea, vomiting, and distention. To make the diagnosis plain, there was an appendix scar. Obstruction, of course! This man was fortunate in having a painstaking, thorough, meticulous analytic surgeon. Why should this pain be felt, even though slightly, in the testicle over his hip? Abdominal pain is never referred here. A urinalysis disclosed a few red blood cells; cystoscopy, a horseshoe kidney and

a blocked right ureter. The point to be emphasized is that the cues are usually present. They are the red entries in the ledger. They may be upstage in the shadows. We miss them from not thinking, or we fail to be impressed because they seem to be so trivial compared with other signs. It cannot be emphasized too strongly that a single urologic cue should be given the greatest consideration even though the abdominal picture stands out in strong light. Recourse to cystoscope, the microscope, and roentgen ray is indicated and causes little delay.

Little need be said about the pain of ruptured ulcer. This is one disease, with its sudden agonizing, brutal attack, its rigid muscles, and its capacity to absorb morphine without relenting, that runs true to the textbook picture. Several things have impressed me. There are silent ulcers, the first sign of which is that of rupture. The history fails in these cases. Shock is not always marked, and the pulse is not always as rapid as one would suppose. The facies are never forgotten. The anxiety, the suffering, the sense of disaster and dissolution are all mirrored. When this picture is present, the diagnosis cannot be denied even though the history for ulcer is absent.

However, if this picture is so modified that all symptoms and signs are softened, if the knees are not drawn up, if the muscles are not hard enough, if the patient looks more comfortable than he should, that is, if his general appearance is disproportionate to the abdominal pain, caution is advised.

In acute abdominal disease with general pain and tenderness there is always one spot more tender than the rest, and it hurts when the patient moves in bed. This observation has been of inestimable value and bears repetition. In acute abdominal disease with general pain and tenderness there is always one spot more tender than the rest, and it hurts when the patient moves in bed. The ruptured ulcer is exquisitely tender over this area. You know that this is true of appendicitis, because the only constant sign is that of focal tenderness. There may be spreading or general peritonitis present, but the appendix region is still the most tender. It is deplorable that more attention is not given in the teaching of medical students to this point of focal tenderness in the diagnosis of appendicitis. Most of

our interns are looking for rigidity, leukocytosis, fever, and pain in the epigastrium, which moves down to the right side. Violent forms of the disease exist with some of the signs absent or so modified that only the experienced can interpret them correctly. But focal tenderness of the diseased organ is always present.

I recently saw a patient with mild upper abdominal distress, without definite pain, without definite digestive disturbances, but with a rapid pulse, chills, high fever, and facies suggesting peritoneal disease. The diaphragm on the right side was slightly fixed. Respiration was normal. Palpation of the gallbladder region showed marked tenderness, which was a great surprise to the patient. All the usual signs of an acute inflammatory gallbladder with stones were so softened and modified that they were in the background, except this one. The patient did not have the acute pain referred to the epigastrium and right shoulder, so typical of gallstones. But he did have focal soreness. Operation revealed empyema with stones. This same principle, if taken in conjunction with other pertinent data, can be applied to the diagnosis of pelvic lesions, whether they be twisted ovarian cyst, ruptured ectopic pregnancy, or inflammatory disease.

The pain of intestinal obstruction is striking. It is colicky and usually felt first in the upper abdomen. It comes and goes. The patient looks sick. There is nausea and later vomiting. Peristalsis is usually heard. And yet with this characteristic and usually unvarying picture, it is often missed. If you do not think that this is so, recall to mind the late and hopeless cases operated upon in your hospitals. Why should this be so? Some still forget that gas or feces will be passed from below the obstruction. Some still fail to look at the hernial orifices, or for abdominal scars. Some still wait for fecal vomiting and terrifying distention. It is a disgrace for any of our profession to wait for these premortal changes. Operation at this time is hopeless and only gives occasion for the usual headlines in the next day's paper, "Patient Dies of Operation." It should read, "Patient Dies of Delay." There is no disease that has a narrower threshold of safety. There is no disease that needs more prompt action. It takes courage in the postoperative cases to tell the sick and discouraged patient

and his anxious and often unfriendly and doubtful relatives that another operation is necessary. Delay in the presence of these faithful symptoms only makes matters worse, whereas prompt and courageous action will save most of these unfortunate patients.

I desire to mention one other condition which has been receiving increased attention during the last few years. I can illustrate this by briefly reciting a case. A young man, about twenty-six, presented himself with pain in the right low quadrant. This had been somewhat chronic in nature, coming and going, but recently had become acute. There was slight fever, mild indigestion, some loss of weight and constipation. The leukocytes were about 15,000 with 80 per cent polymorphonuclears. Examination revealed a great deal of soreness in the appendix region and a suspicion of a mass. It was thought that this was a case of appendiceal abscess. At operation, the terminal ileum was found to be enlarged, thickened, purplish-red in color and somewhat edematous, for a distance of four or five inches. The appendix looked somewhat the same and the tip of it was attached to this thickened ileum and was canalized with it. This being my first introduction to terminal ileitis, I did not recognize it and felt that because the appendix had canalized itself to the ileum, the latter organ presented the picture which it did. The appendix was removed and the patient made an uneventful recovery, gained weight and had a good appetite.

A few months later, he was seized with a sudden, violent, acute pain in this right side, high fever, nausea and vomiting. X-ray study revealed the typical findings of terminal or regional ileitis. To show how frail human knowledge and judgment may be, I will tell you that because it seemed a little better, and because the holiday season was approaching, I felt that we could postpone the necessary resection of this portion of the bowel until after the holidays. Within twenty-four hours he presented himself with signs of a ruptured bowel in this region. Operation was immediately performed and the sac intensely swollen, edematous ileum was found. In spite of the local peritonitis which was present, radical resection was done and the Mikulicz technic employed by bringing the two ends of the bowel out together. After a stormy convalescence, he recovered and later a repair was

made of the bowel. He has remained perfectly well to date.

The original description of this lesion was by Crohn, in 1932, who described it as a granulomatous, ulcerated, stenosing inflammation of the small intestine. The characteristic feeling of the region took me back to my boyhood days when I used to handle and catch snakes. The bowel was thickened, slightly flexible and gave one also the impression of a flexible lead-pipe.

No effort has been made to cover all the acute conditions that may happen within the abdomen. Emphasis has been placed only upon certain factors of diagnosis and those conditions which were mentioned have only served to illustrate the application of these principles.

These foregoing principles are elementary but certainly fundamental. It should be remembered that disease of any system or organ results in a disturbance of function of that organ. The signs and symptoms are always present to some degree. Confusion and mistakes occur by reason of

our own inattention and prejudices. It is helpful to remember that after the age of forty, practically no new abdominal diseases exist except neoplasm and inflammations, all other being complications of pre-existing conditions. It is pertinent to remember, as DaCosta said, that an absent sign should be given grave consideration. Finally, it is invaluable to remember the tendencies, the conventionalism if you please, the relation of acute disease to age and sex.

If all available data, for and against, were put down in parallel columns, as in a ledger, and a balance struck off, the diagnosis would rarely be wrong.

At times I admire a snap diagnosis, because I have learned that it is not snap at all but represents the epitome of experience acquired by virtue of eyes that see, ears that hear, delicate fingers that touch, and a mind that correlates. Not all the tragedy is in the abdomen of the patient. There will be less in our own hearts as we become better clinicians.

AGRANULOCYTOSIS FOLLOWING THE PROLONGED USE OF ALLONAL*

ALFRED HOFF, M.D.

Saint Paul, Minnesota

IN 1922, Werner Schultz¹⁸ described a highly fatal syndrome which he regarded as a new and distinct clinical entity and for which he proposed the term "agranulocytosis." It occurred mostly in elderly women and was characterized by necrotizing lesions in the mouth, pharynx, rectum and vagina, and was associated with fever, marked prostration and a profound leukopenia with complete or near complete absence of the granulocytes in the circulating blood, but with little if any anemia or reduction in the blood platelets. Subsequent terminology used by various writers include agranulocytic angina,⁸ idiopathic neutropenia,¹ malignant neutropenia² and primary granulocytopenia.

Since then much discussion has arisen as to whether or not it really constitutes a new or a distinct clinical entity.^{3,7,10}

Surveys of the medical literature by numerous

writers, among whom especially to be mentioned are Thomas Fitz-Hugh, Jr.,⁶ and Kracke and Parker,¹¹ indicate that prior to his original description there are possibly only three reports of cases which at the present time would be classified as agranulocytosis: One by Brown, in 1902, entitled, "A Fatal Case of Acute Primary Pharyngitis with Extreme Leukopenia"; one by Schwartz in 1904, "A Case of Extreme Leukopenia," one by Tuerck in 1907, "Septic Disease with Atrophy of the Entire Granulocytic System." According to Fitz-Hugh,⁶ Brown believed that his case was identical with those of plegmon of the pharynx reported by Senator in 1888.

Leichtenstein, cited by Küpper,¹³ reviewed all cases since 1916, in the Stockholm Hospital, for epidemic diseases "recorded as septic angina, acute leukemia and diphtheria and found prior to 1926 only five cases (of which three were doubtful) which could be possibly called agranulocytosis, and after 1926 twenty-six cases all of

*Read before the Minnesota Academy of Medicine, December 9, 1936.

which were unmistakable." In the same paper he collected 327 cases from forty-three different observers and found that it occurred three times more frequently in the female sex than in the male, that the age incidence was between 30 and 60 years and that the mortality rate in 227 cases was 75 per cent.

Kracker and Parker¹¹ gave an excellent and comprehensive review of the literature and stated that "it was responsible for more than 1,500 deaths in the United States alone in the three-year period ending in 1934."

The salient features¹² in the etiological approach may be briefly summarized as follows:

Lovett, who reported the first case in the United States, attempted to prove a bacterial cause for the disease, but this was disproved when Kracker demonstrated that the leukopenia preceded the septic manifestations.

Miller and Rhodes produced ulcerative stomatitis with leukopenia in dogs on a vitamin G deficiency diet and Britton and Corey observed leukopenia in adrenalectomized cats.

Thompson's report of eighteen young women, whose agranulocytic attacks coincided with their menstrual cycle, suggested the possibility of an endocrine dysfunction. However, Wingate Johnston reported a case occurring in a physician's wife during her menses who completely recovered on discontinuing the use of amidopyrine, which was taken only at that time.

In 1935, Stephens and Lawrence²⁰ reported a case of cyclical agranulocytic angina in which, for two years, the patient "presented the unusual picture of recurrences of granulocytopenia with each menstrual period." They go on to say: "Following bilateral oöphorectomy there was slight change in the picture during a period of one year, after which time no further recurrences occurred. Amidopyrine was taken at times by this patient, but our dates do not allow any positive statement as to any causal relationship between it and the cycles of granulopenia."

For many years certain chemicals and physical agents have been known to have a decided depressant effect upon the bone marrow, namely—radium paint, x-rays, arsphenamine, gold salts, bismuth, dinitrophenol and amidopyrine.

Selling,^{9,19} in 1910, was the first observer to call attention to the markedly depressant effect of benzene on the hematopoietic system. He re-

ported three cases of purpura hemorrhagica due to benzol poisoning. In 1916 he stated, "Benzol is a powerful leukotoxin. It destroys the white cells of the circulating blood and the parenchymal cells of the hematopoietic organs. Myeloid tissue is injured more than lymphoid tissue and, corresponding to this, the polymorphonuclear leukocytes of the circulating blood are more affected than the lymphocytes. The erythroblast tissue of the bone marrow is destroyed but the circulating erythrocytes are injured relatively little."

Kracker's¹¹ report, in 1931, of a case of acute fulminant agranulocytosis following large doses of phenacetin gave the first intimation of the possibility of a drug relationship.

In 1933, Videbech¹² in Denmark, and in 1934 Madison and Squier¹⁴ in America were the first to incriminate amidopyrine. The latter's fourteen cases all gave a history of amidopyrine medication prior to the onset of the disease. They also gave amidopyrine to two recovered cases with a resultant relapse in each instance, while a like trial on a normal individual had no effect.

Since then, according to Kracker,¹² 172 cases have been reported following the administration of drugs: 153 following amidopyrine, six dinitrophenol, four neostoban and the remaining, group of various drugs.

Squier and Madison¹⁵ recently tabulated 202 cases taken from thirty-three authors and found that in 163 the granulocytopenia was preceded by amidopyrine alone or in combination and thirty-nine by other drugs bringing the total number to 202 cases in which a drug etiology was probable.

In view of the enormous amount of amidopyrine generally used without obvious ill effects, Pepper⁵ suggested a sensitivity reaction on the part of the individual to explain its occasional toxic action on the bone marrow.

Rawls¹⁶ recently studied the effect of amidopyrine upon the red, white and polymorphonuclear blood cells in a series of 100 patients suffering from arthritis. Over 100,000 tablets of amidopyrine were administered to 400 patients and of these four developed agranulocytosis with three deaths (1 per cent). He came to the conclusion that amidopyrine does not produce hematologic changes except in certain isolated cases where there is probably an idiosyncrasy.

crazy to the drug. He stated that it should not be given to elderly people or to those with a long standing infection.

Fitz-Hugh and Krumbhaar,⁷ in 1932, reported the pathological changes found in the bone marrow in three fatal cases of agranulocytosis and stated that the marrow of the bones examined in one case contained active hematopoietic areas filled with myelocytes, promyelocytes and myeloblasts while the peripheral blood contained only 200 w. b. c. per cu. mm. In the two other cases there was likewise absence of myeloid aplasia. They suggested a condition of a myelocytic maturation arrest as an explanation for the paucity of the circulating granulocytes.

Henry Jackson, Jr.,¹⁰ in a recent article agrees with this viewpoint and in addition to twenty-seven of his own cases coming to autopsy cites eleven cases analyzed by Custer in which "there was marked proliferation of the myeloblasts with failure of these cells to mature, while the other elements of the bone marrow were undisturbed."

Leukopenia and granulopenia are frequent accompaniments of many disease states, such as the leukopenic phase of an acute leukemia, pernicious anemia, aplastic anemia and certain infectious diseases, such as typhoid and typhus fever, influenza and measles.

In the infectious diseases the clinical features are usually distinctive and serve to make diagnosis possible. However, confusion in differential diagnosis may arise in certain types of blood dyscrasias unless one recognizes that neither marked anemia or thrombopenia are features of the disease. If one permits a severe anemia or hemorrhages in the skin to enter into the clinical picture, the diagnosis of agranulocytosis becomes hopelessly confused with other types of bone marrow insufficiency and especially with the acute phase of aleukemic leukemia in which symptoms in every other respect may be identical.

The present concept¹⁷ of agranulocytosis holds that it is due to a depressed condition of the bone marrow in which a selective failure of the myelocytic function occurs, causing a complete or a near complete disappearance of the granulocytes in the blood stream with clinically unimportant involvement of the circulating erythrocytes and thrombocytes.

When this condition is diffuse,⁴ all the formative elements of the bone marrow are involved, resulting in anemia, thrombopenia, leukopenia

and granulopenia, as illustrated in aplastic anemia.

The granulocytes⁴ protect the body against bacterial invasion and with their disappearance active immunity is lost and local bacterial invasion takes place in the form of necrotic lesions in the mouth, pharynx and rectum. General septic invasion results unless timely granulocytic recovery takes place. However, general sepsis may be so abrupt as to preclude the possibility of timely granulocytic response, thus resulting in the acute fulminant type and an invariably fatal outcome.

The purpose of this paper is to report three cases of agranulocytosis following the long continued use of allonal occurring in patients who had been under observation and care for several years.

Case Reports

Case 1.—Mrs. E. McP., aged sixty-four, widow, weight 176 pounds, was under observation from 1926 to 1929. During this period her chief complaints were cough, epigastric and precordial discomfort, associated with easy exhaustion, nervousness and insomnia.

Physical examination, including x-rays of chest and gastrointestinal tract, electrocardiogram, blood and urine was negative. During 1927, 1928 and 1929, veronal, allonal and amytal compound were frequently used for insomnia. The exact amount is unknown.

The earliest symptoms of the disease which eventually led to a fatal termination manifested themselves during the Christmas week of 1928, when she said that she was confined to her bed on account of the "flu," with severe cough and fever. Following this she became easily tired and perspired upon the least exertion.

On March 4, 1929, she had a severe attack of vomiting and stated that one week previously she had first noticed a swelling and pain in the left side of her neck.

On admission to the hospital on March 23, 1929, there was a tender lemon-sized hard mass in the left side of her neck posterior to the sterno-mastoid muscle. The white cell count was 4,000. No differential count was made. The abscess was drained on the eleventh day and at the end of two weeks she left the hospital improved.

During this time she took two allonal tablets every night. On April 27, 1929, one of the right upper molars was removed. Swelling of the parts and soreness in the back of the throat, roof of the mouth and gums followed, accompanied by pain and difficulty in swallowing.

On April 30, 1929, she was readmitted to the hospital. At this time there was a rather deep ulceration 1.5 centimeters in diameter with a sharp clean-cut edge adjacent to the site of the extraction and a small necrotic area in the roof of the mouth. The extraction

site was deep and gangrenous. The base of the ulcer was covered with a thick adherent greenish-gray tenacious exudate.

The gum was reddened, spongy and a grayish exudate

with a total white count of 8,100 which followed the intramuscular injections of phlogetan, a vegetable protein, 88 per cent were lymphocytes; 2.5 per cent neutrophils; 5.5 per cent monocytes; 3.5 per cent basophils, and 2.5 per cent eosinophils, showing a relative and absolute increase in the lymphocytes but no granulocytic response.

Likewise, no effect was obtained by the oral administration of liver extract or small doses of neosalvarsan.

After a month's period of apparent well being, she had a sudden onset of exquisite pain on August 5, 1929, involving the posterior right thoracic and axillary region accompanied with small moist râles at the bases of the lungs, marked prostration and repeated vomiting. Her course ran rapidly downwards and she died on the third day after the acute onset.

Her blood picture two days before the onset of the fatal episode was as follows: Hemoglobin, 78 per cent; erythrocytes, 3,810,000; leukocytes, 5,800; differential count: polymorphonuclears, 6 per cent; lymphocytes, 77.5 per cent; monocytes, 6.5 per cent; eosinophils, 7.5 per cent; basophils, 2.5 per cent.

Clinical diagnosis.—Chronic agranulocytosis terminating in an acute fulminant attack and following the long continued use of allonal.

Necropsy findings.—The body was that of a well-developed, well nourished, adult, white female, 164 cm. in length and 150 pounds in estimated weight. Rigor mortis was absent. Deep hypostasis was present on the dependent parts, particularly on the posterior aspects of the thorax. A healed wound, well surrounded by a zone of purplish discoloration, well encrusted, was observed on the dorsal aspect of the right arm. No edema, jaundice, or cyanosis was noted. The skin was somewhat sallow.

The subcutaneous adipose tissue was abundant.

The peritoneal cavity contained no excess fluid.

The appendix hung free. The colon was enormously dilated. The liver was behind the costal margin. The height of the diaphragm was at the fourth intercostal space on the right and the fifth rib on the left side.

The pleural cavities showed no adhesions or fluid. The parietal pleura on the right side was more reddened than that of the left.

The pericardial cavity contained about 10 c.c. of clear, amber fluid. The pericardium was normal.

The heart weighed 425 grams. The epicardium was smooth. The myocardium showed a slight thickening of the left ventricle, was pale red and somewhat soft in consistence. The mural endocardium was smooth. The valves showed no disease. The coronary arteries showed a slight degree of atheromatous changes, but the lumina were patent throughout. The root of the aorta showed a smooth intimal surface, and a normal thickness of the wall.

The left lung weighed 400 grams. Crepitation was preserved throughout except the dependent portions, which were dark red in color, partly atelectatic, and showed a small amount of bloody fluid on cut surfaces. No pus was demonstrated. The right lung weighed

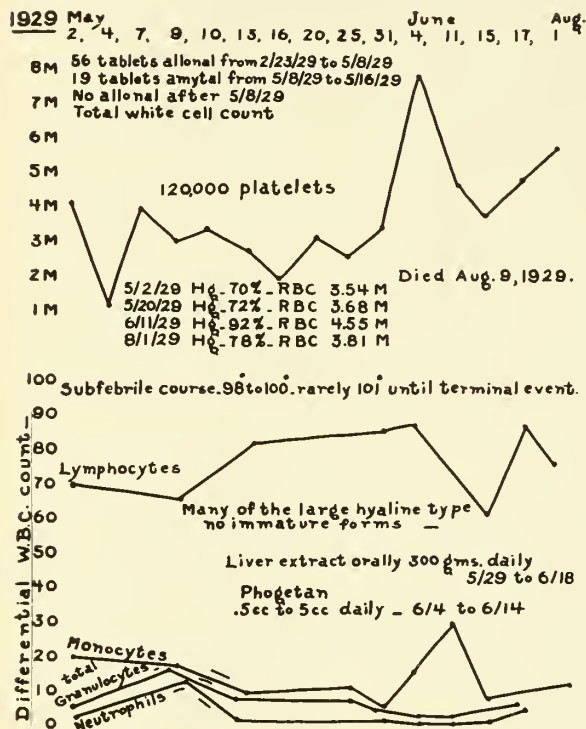


Fig. 1. Mrs. McP.: age sixty-four years. Chronic agranulocytosis terminating in an acute fulminant attack. Course during two months: White blood cell counts with percentages of lymphocytes and monocytes. Hemoglobin, erythrocytes and treatment employed.

was adherent to the gingival margin on the right side of the mouth. Tonsils were swollen and injected. The exudate from the ulcer in the mouth showed many fusiform bacilli and spirals, Vincent's organisms and nonhemolytic streptococci. Temperature on admission was 99.6°. This varied from 100° to 102° during the course of the disease.

The accompanying chart (Fig. 1) covers a period of three months and shows the blood counts made, the amount of allonal and medication used and the treatment employed in an effort to stimulate granulopoiesis.

It will be noted that on admission the blood showed a Hg. of 77 per cent; red blood cells, 3,540,000; leukocytes, 4,300; polymorphonuclears, 4 per cent; lymphocytes, 70 per cent; monocytes, 21 per cent; basophils, 3 per cent; plasma cells, 2 per cent. The morphology was that of a slight secondary anemia and no immature cells such as found in leukemia were present.

The subsequent course shows a fairly constant level of erythrocytes and hemoglobin percentages. The platelets numbered 120,000. The total white count fluctuated from 1,300 to 8,100 with but little change in the abnormal lymphocytic-granulocytic relationship. Even

50 grams. Crepitation was present throughout the upper and middle lobes. The lower lobe was dark red in color, atelectatic, and showed an area of blackish-red discoloration about 6 cm. in diameter along the periphery

of the terminal ileum and in a few areas of the colon, but no ulceration was noted.

The pancreas was normal.

The adrenal glands were normal.

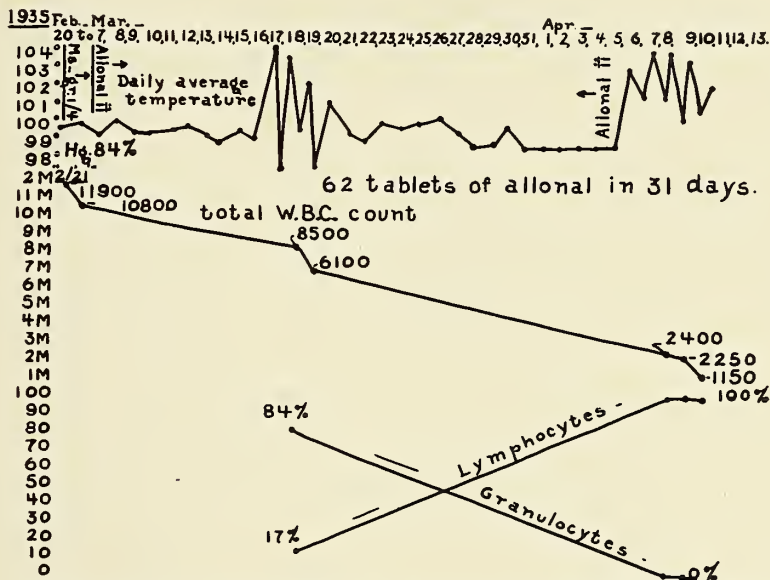


Fig. 2. Mr. W. C. K.: age sixty-three years. Acute fulminant agranulocytosis occurring while under treatment for a different ailment. Daily average temperature readings. Amount of allonal used. White blood counts with percentages of granulocytes and lymphocytes made during two months observation in hospital.

in the axillary line and near the base, which was solid on palpation, somewhat raised over the pleural surface, and, on section, showed a dry, red surface with a fading margin. The vessels leading into this area were occluded. No pus could be expressed.

The spleen weighed 255 grams. The capsule was smooth and tense, and the surface was dark and mottled and somewhat lumpy. The cut surface was dark red and showed the pulp dark red and soft. The corpuscles and trabeculi were fairly visible.

The liver weighed 1,700 grams. The capsule was smooth but somewhat mottled, bluish-gray in appearance. The cut surface showed extensive hemorrhages in the centers of the lobules, and yellowish, cloudy parenchyma. The liver was somewhat cloudy and soft in consistence.

The gallbladder was greatly distended and enlarged to the size of a pear. The serosa was dull and edematous. The wall was somewhat fibrous. It contained a dark mucoid bile and a rough, round calculus 1 cm. in diameter.

The esophagus was distended to a diameter of 2 cm. The wall was thickened and edematous. A few small islands of swollen mucosa were noted within a diffuse area of superficial ulceration which showed a dark purplish discoloration of the base throughout. The distal three centimeters showed no ulceration. The stomach showed no ulcer. Its mucosa was congested. Edema and congestion were noted along the mucosa

The right kidney weighed 165 grams and the left 145. The capsules stripped readily, leaving smooth surfaces. The cut surfaces were cloudy, and showed the cortices somewhat narrowed. The pelves were slightly dilated and the pelvic mucosa edematous and injected.

The ureters and the urinary bladder were essentially normal. The latter was distended.

The uterus and adnexa were small and atrophic.

Lymph nodes were not prominent.

The aorta showed a moderate degree of atherosclerosis in the abdominal portion.

The neck and head were not examined.

The bone marrow of the right femur showed a red-dened, meaty, marrow tissue in excess amount.

Diagnosis (Kano Ikeda, M.D.):

1. Agranulocytic angina (clinical).
2. Gangrenous esophagitis.
3. Septic infarct of the lower lobe of the right lung.
4. Cloudy swelling of the liver, spleen, kidneys, and heart.
5. Hyperplasia of the bone marrow.
6. Chronic cholecystitis with cholelithiasis.

Baldrige and Needles, in 1931, stated: "Many authors do not accept as agranulocytosis any case in which there is a significant absolute increase in lymphocytes or monocytes." However, they considered this to be of doubtful value.

This proven case of agranulocytosis shows an unusually sustained high level of total white blood cells caused by an absolute increase in

night sweats, marked exhaustion and by the daily recurrence of severe epigastric pain beginning about eight o'clock P. M. The pain was not influenced by rest diet, belladonna, alkalies or codeine, but was controlled

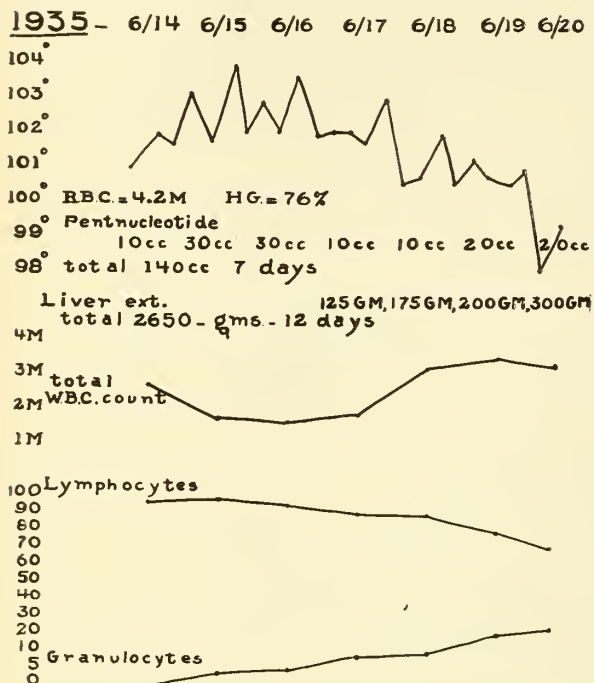


Fig. 3. Mrs. C. L. H.: age sixty-five years. Agranulocytosis. Course during first week: Daily total white blood cell counts with percentages of granulocytes and lymphocytes, temperature range and treatment employed. Hemoglobin and erythrocytes on admission.

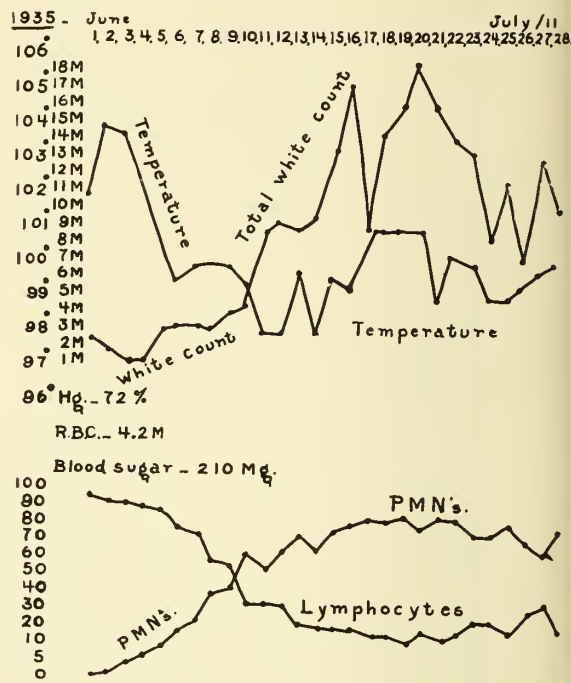


Fig. 4. Mrs. C. L. H.: Course during first twenty-eight days. Daily white blood cell counts with percentages of granulocytes and lymphocytes. Maximum temperature readings.

lymphocytes and monocytes and, therefore, suggests the necessity for routine differential white blood cell counts if diagnostic errors are to be avoided.

Case 2.—Mr. W. C. K., aged sixty-five years, salesman, widower, had been observed intermittently over a period of seventeen years with symptoms suggestive of duodenal ulcer but with negative x-ray findings.

On the evening of February 17, 1935, after five years of comparative good health, while he was bending forward and applauding the players in a hockey game, he was suddenly seized with a violent pain in his right groin, radiating upwards to the right costal margin. During the night it localized in the epigastrium, was constant and prevented sleep. He repeatedly attempted to vomit. He was seen early the following morning, at which time he complained bitterly of epigastric pain. His entire abdomen was soft, without localized tenderness or distention. Morphine gave him almost immediate relief and this relief was maintained during the next two days, only to have it recur on the third day.

His general appearance was now that of a very sick man. His face was pale, his skin moist and clammy but his abdomen was still soft and without tenderness or distention. An electrocardiogram was negative. His course in the hospital was characterized by profuse

by the daily administration of morphine. Morphine was continued for fifteen days and then stopped when two tablets of allonal were found to give complete relief.

The exact cause of his complaint remained obscure as no definite objective findings were present. An x-ray gastro-intestinal study showed no intrinsic lesion in the stomach proper or duodenal cap but a large and unusual curve of the duodenum suggested a pancreatic lesion.

Two tablets of allonal were given every night from March 7 to April 6, making a total of sixty-two tablets in thirty-one days.

The chart (Fig. 2) gives his daily maximum temperature range, total white blood cell and differential count. During his first two weeks in the hospital his maximum temperature range was about 100° and his w. b. c. 11,900 and 10,800—with a hemoglobin of 84 per cent. No differential count was made. No change occurred in his temperature until March 17, when it suddenly reached 104.6°, gradually returning to his usual range after five days. On March 17, at the maximum temperature reading the total w. b. c. were 8,500, with 8 per cent granulocytes and 16 per cent lymphocytes. On the next day it was 6,100.

On April 5 he complained of severe sore throat. On the next day his temperature rose to 103.4° and his right submaxillary lymph glands were enlarged.

He ran a rapid septic course with marked enlargement of his submaxillary lymph glands and died on April 10, 1935, the fifth day after the clinical onset.

He showed a complete granulopenia on April 8, 9,

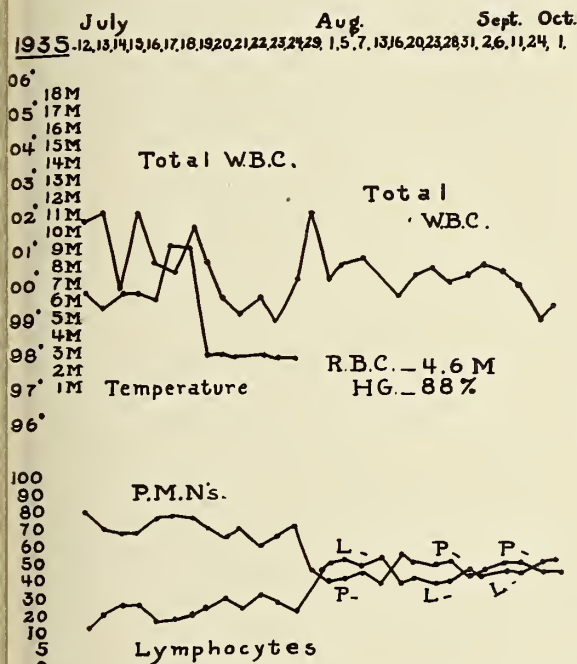


Fig. 5. Mrs. C. L. H.: Course during subsequent three months.

and 10, with total leukocytes of 2,400, 2,250 and finally 150. No immature cells were found.

The final event was not influenced by the pentnucleotide therapy attempted.

This is a case of acute fulminant agranulocytosis, occurring during the period of hospitalization for a different ailment and following the daily use of two tablets of allonal for thirty-one days.

Case 3.—Mrs. C. L. H., housewife, sixty-six years old, entered the hospital on June 14, 1935, on account of sore throat, general body aches and a temperature of 101°. These symptoms began six days previously. She complained bitterly of her throat, the degree of soreness seemingly out of proportion to the objective findings. In February, 1935, she had a similar attack and was confined to bed for two weeks. At this time she developed a small necrotic area on the left margin of her tongue and a moderate gingivitis. She was not hospitalized. She made a good recovery and remained well until the onset of her present complaint. During the past ten years she has been a mild hypertensive and diabetic not requiring the use of insulin. At rare intervals over a period of many years, paroxysmal attacks of precordial pain, radiating into the neck and left arm, have occurred. These were relieved by rest.

She is also decidedly sensitive to ragweed pollen, suffering with seasonal hay fever and asthma.

Insomnia had not been an outstanding feature, although troublesome at times. To relieve this difficulty allonal was prescribed three years ago. Since that time, she has averaged 12 allonal tablets monthly. The course of the disease is shown in the accompanying charts (Figs. 3, 4, 5). These record daily white blood cell and differential counts and temperature for a period of forty-one days. Thereafter the counts are as indicated for a subsequent period of eight months. It will be noted that on admission June 14, 1935, her temperature was 101; red blood cells, 4,200,000; hemoglobin, 76 per cent; white blood cells, 2,750; lymphocytes, 99 per cent, and one degenerated granulocyte. Subsequent daily counts are shown and their return to a normal total and qualitative count paralleled the pentnucleotide and liver therapy.

The pentnucleotide was discontinued on the eighth day, after a total of 140 c.c. had been given. Daily injections of liver extract to the equivalent of 2,650 grams of liver were given over a period of twelve days, and then discontinued for about one month. In addition one ounce of raw fresh bone marrow was given three times daily. On the tenth day she began to complain of soreness in her left buttock and a firm tender egg sized mass was palpable in the deep subcutaneous tissues. As this gradually increased in size, the white blood cell count reacted strongly and reached a level of 17,500 per cu. mm. with 80 per cent granulocytes and 20 per cent lymphocytes. The abscess was drained on July 18, twenty-six days after its onset, resulting in a return to a normal temperature and a subsequent fluctuating white blood cell count and an interlocking differential one. The subsequent white counts have been made at intervals of two to three weeks up to September 1, 1935.

It will be noted that the total white cell counts have remained at a very satisfactory level but that the granulocytes have shown a tendency to a reduction in their normal qualitative relationship.

The monocytes and eosinophils varied between 1 and 3 per cent; the monocytes during convalescence rarely exceeded 7 per cent. Erythrocytic values maintained a constant level at about 4,500,000. The first two months after leaving the hospital she received the equivalent of 100 gms. of liver extract intramuscularly three times weekly and thereafter 100 gms. at intervals of three weeks to two months. These dates correspond with those of the white cell counts.

During the acute stage of her illness a mild glycosuria was present with a blood sugar of 210 mg. per 100 c.c. of blood.

For a short period of time, she was on a high nucleoprotein diet, cod liver oil and Brewer's yeast tablets and now on February 1, 1937, after a period of nearly two years, she has remained perfectly well. Her total white and differential counts are within normal limits at the present time.

No amidopyrine-containing drugs have been used since the onset of her illness.

Diagnosis.—Agranulocytosis, recurrent type, with recovery.

Comment

Allonal, according to its manufacturers, is allyl isopropylbarbituric acid chemically fused with amidopyrine in the proportion of 1:1 $\frac{2}{3}$.

It enjoys considerable popularity as a pain relieving and sleep inducing drug both among physicians and the laity and in consequence is extensively used.

Ordinarily it may be administered with unquestioned safety. I had one patient who took two, sometimes three, tablets every night for four years without demonstrable injury. But the accumulated evidence against amidopyrine-containing drugs is such as to warrant the statement that its prolonged ordinary use in the occasional sensitized individual may result in agranulocytosis and death. There is no exact method for accurately determining such sensitivity and as a result where its use is unduly prolonged it becomes necessary to check up such patients with frequent total and differential white blood cell counts for evidence of leukopenia and granulopenia and also to exert our best efforts to prevent its indiscriminate use among the laity.

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NEWER DEVELOPMENTS IN ANESTHESIA*

EDWARD B. TUOHY, M.D., M.S.

Rochester, Minnesota

VARIOUS local and general anesthetic agents are submitted to the medical profession each year for the purpose of improving surgical procedures and alleviating pain. Whereas certain methods and agents have been proved by experience and time to be efficient and safe, it is only through the introduction of newer ones that progress can be made in order to obtain the optimal results. It takes years of trial to prove the merit of any anesthetic agent and consequently comparatively few of them endure. In the realm of general anesthesia, ether, nitrous oxide, and chloroform are still the most popular,

while procaine hydrochloride and cocaine hydrochloride as local anesthetic agents are predominantly used.

With the advent of newer types of gas machines for administering anesthetics, the carbon dioxide absorption technic has greatly reduced the cost of anesthesia to patients, because it is no longer necessary to use a continuous flow of gases. By means of rebreathing, the exhaled gases are passed through soda lime to remove the excess carbon dioxide, and then returned to the patient to be reinhaled. Thus, it is necessary only to use additional gas intermittently because some is lost through leakage about the face mask and connections with the gas machine. Oxygen

*From the Section on Anesthesia, The Mayo Clinic, Rochester, Minnesota. Read before the meeting of the Northern Minnesota Medical Association, Fergus Falls, Minnesota, August 31 to September 1, 1936.

the only gas which is supplied continuously maintain basal metabolic processes.

This method of rebreathing and carbon dioxide absorption has made possible the use of the relatively expensive gaseous anesthetic, cyclopropane, introduced six years ago by Henderson and Lucas, and developed clinically by Waters and Schmidt. This agent is inflammable like ethylene, but produces more rapid anesthesia with less excitement and it may be used with higher concentrations of oxygen. This is a decided advantage when patients have a secondary anemia. The relaxation obtained with cyclopropane approaches that produced with ether. Recovery from anesthesia is rapid and the incidence of postoperative nausea and vomiting is minimal.

In all methods of general anesthesia, no matter what the agent used may be, the intratracheal use of soft rubber is a decided aid when there is evidence of obstruction in the air passages, or when serious respiratory collapse occurs. The tube may be introduced orally or through either nostril, depending on the individual case, and the free end may be connected directly by means of special adapters to a gas machine or a face mask and may be placed over it.¹² This method is of further advantage in certain operations on the head and neck in which it is desirable to have the anesthetist out of the operative field, and in high abdominal or diaphragmatic operations where it permits quiet, easy respiration. In operations on the brain the intracranial pressure is reduced when the intratracheal method of anesthesia is used.

Divinyl Ether ($\text{CH}_2\text{CHOCHCH}_2$)

Divinyl ether is a comparatively new anesthetic agent which is prepared under the trade name of "vinethene." It was predicted by Leake and his associates that this compound would possess an action resembling both diethyl ether and ethylene. It is very volatile and requires special apparatus for its administration by the closed method.

Jackson in experiments on dogs found that anesthesia produced by moderate concentration of the vapor of divinyl ether is somewhat lighter than that produced by diethyl ether. He also found with divinyl ether that there is evidence of more muscular twitching and slight convulsive movements than there is with ether. In this

respect he felt that the action of divinyl ether on dogs resembles that of ethyl chloride. Goldsmith and his associates have used divinyl ether rather extensively and have experienced satisfactory results in practically all types of operations. The drug is definitely more potent than ether is and the induction and recovery periods of anesthesia are rapid. As yet divinyl ether has not had adequate clinical trial to determine its efficiency and merit, but in the next year or so more extensive information should be available.

Trichlorethylene is an anesthetic of the unsaturated chlorinated hydrocarbon series. It is a solvent of fat and for years has been used for cleaning purposes, especially in dry cleaning work. The fact that trichlorethylene produces anesthesia and is noninflammable and nonexplosive is a definite advantage which most anesthetic agents do not possess. It is relatively less volatile than diethyl ether or ethyl chloride and must be administered with caution because a comparatively small amount will produce anesthesia. If one attempts to force or hurry anesthesia with trichlorethylene there is danger of serious respiratory paralysis. The degree of surgical relaxation is not as pronounced as it is with diethyl ether but recovery is more rapid. The administration of trichlorethylene has been advocated to relieve the pain of tic douloureux. The usual method of administration has been to place 25 to 30 drops of trichlorethylene on a gauze sponge or handkerchief and instruct the patient to inhale deeply until practically no odor remains. This procedure may be repeated three to four times a day depending on the nature of attacks. The relief of pain is probably attributable to the production of mild anesthesia and not to any specific or selective action of the drug on the fifth cranial nerve. In addition, trichlorethylene has been used in the same manner to alleviate the pain associated frequently with coronary disease. The relief mechanism, if the treatment is successful, is the same as that for trigeminal neuralgia. The reliability of trichlorethylene in either condition, however, is not constant but the agent may be used in the event other measures are not available or have failed.

Oxygen Therapy and Helium

A gas, relatively new in the field of anesthesia and therapeutics, is helium. Because of its low specific gravity (1.98) and atomic weight (4)

it was suggested by Barach that helium could be used with advantage in cases in which individuals were dyspneic. Less muscular effort would be required to move a mixture of oxygen and helium to and fro in the tracheobronchial tree than would be required to move one of nitrogen and oxygen. The reason for this is a physical one since a mixture of helium and oxygen is three times lighter than one of nitrogen and oxygen. Helium tanks may be attached to a gas machine and the agent may be administered like other gases. The nitrogen present in the respiratory circuit is gradually displaced by helium, and oxygen is added in whatever percentage is necessary. Any of the usual anesthetic gases may be administered along with the oxygen and helium if desired. The chief therapeutic uses for helium at present have been in cardiac diseases with decompensation and in asthmatic conditions. It is not unlikely that it will have greater applicability and usefulness in the future.

As a means of combating anoxemia, oxygen may be administered by a nasal catheter or with the more frequently used oxygen tent. The former method, however, is less expensive and in many instances will serve the same purpose as an oxygen tent. Wineland and Waters have studied the relative use of oxygen administered with the nasal catheter and concluded that adequate percentages of oxygen may be obtained in the bronchi by this method. A satisfactory method of administering oxygen by way of the nasal catheter is to place the tip of the catheter in the oropharynx, just back of the uvula. The distance from the end of the catheter to the exterior nares will usually correspond to the distance from the tragus of the ear to the nares. A flow of 6 to 8 liters of oxygen will usually maintain an oxygen percentage of 50 to 60 in the region of the glottis. If the flow of oxygen is too large, or if the nasal catheter is inserted too far, there is a tendency for the patient to swallow air.

Local Anesthetic Agents

Most local anesthetics are direct or substituted derivatives from one or several of the ring forms present in cocaine. For example, procaine hydrochloride is one of the most widely used of the cocaine derivatives. Metycaine, formerly known as "neothersin" or "pipercaïne," is likewise a

cocaine derivative of the piperidine series. In spite of all the various local anesthetic agents that are available for use now, practically all of them adhere to groups of known activity, and very few entirely new agents have been introduced. Procaine, or novocaine, is probably employed more frequently for local use than is any other agent, with the possible exception of cocaine. Years of experience have indicated that procaine is relatively one of the safest agents. A new local anesthetic which is being used for local anesthesia, and which has been investigated by Leffler and Adams, belongs to the oxazoline series and is closely related in activity to procaine. This agent, d-aminophenyl-oxazoline, is half as toxic as procaine, possesses the same pH as blood, and produces local anesthetic effect comparable to procaine in the proper concentration. As yet no clinical information is available, but this agent should have definite merit as a new local anesthetic.

Metycaine, which previously has been mentioned, is both a topical and local anesthetic which is slightly more toxic than is procaine when injected intravenously into animals. When used for regional anesthesia, such as spinal anesthesia, its toxicity is little, if any, greater than that of procaine and it produces longer anesthesia with comparable dosages than does procaine. The advantages claimed over procaine are, therefore, its applicability to the surfaces of mucous membrane and the longer anesthetic effect. In certain cases metycaine may be substituted for cocaine if necessary.

Methods of Regional and Local Anesthesia

Field block of the upper abdomen is a valuable procedure to use preliminary to a laparotomy under general inhalation anesthesia. It aids in reducing the amount of general anesthetic agent required, and is used in cases in which there is debility of rather marked degree. Blocking the sacral or cervical plexus is definitely reliable when properly done. The former, sacral block possesses all the advantages of spinal anesthesia for operations on the anus and perineum, and is accompanied by a minimum of untoward reactions. Operative procedures on the neck, such as laryngectomy, thyrotomy, and dissection of lymph nodes are frequently done by blocking the cervical plexus when it is not advisable to use a general anesthetic. In selected cases spinal anes-

thetia is used for abdominal operations below the diaphragm and for operations on the lower extremities. The general physical and mental status of the patient is the deciding factor in determining whether spinal anesthesia is the best choice of anesthetic procedure. Debility, which connotes marked loss of weight, definite anemia, and low blood pressure or cachexia, is the chief outstanding contraindication to spinal anesthesia. Furthermore, certain nervous and apprehensive individuals are not the best candidates for this form of regional anesthesia. When spinal anesthesia is the method of choice the dosage of the agent used is determined by the consideration of age, weight, height, blood pressure, hemoglobin, and type of operation. In cases in which procaine hydrochloride is used, not more than 1 mg. of the drug per pound of body weight is usually used.¹⁰ When other agents are used a similar equivalent ratio is calculated. In certain operations on the upper part of the abdomen, spinal anesthesia is intentionally combined with a general inhalation anesthetic. In these cases a small dose of spinal anesthetic is administered in order to minimize the amount of general anesthesia. As a rule the incidence of nausea or vomiting is increased in operations on the upper part of the abdomen under spinal anesthesia, and the direct combination of general anesthesia assists in preventing this. However, in not a few cases inhalation of oxygen and carbon dioxide alone will suffice to control the nausea.

Peridural Anesthesia

Pages, in 1921, and Dogliotti, in 1933, independently described a method of producing segmental or localized anesthesia by means of injecting a local anesthetic into the peridural space. This space lies between the ventral surface of the spines of the vertebra and the dura mater, and extends from the sacrum to the foramen magnum. It is filled with fine connective tissue, small blood vessels and fat, but its consistency still permits the easy diffusion of anesthetic substances.

The anesthetic agent injected into the peridural space acts on the spinal nerves extradurally, on the spinal ganglion and paravertebral sympathetic nerves. It is possible, therefore, with this method, to anesthetize certain limited areas or segments of the body. The technic of the injection is more delicate than that of sub-

arachnoid block, however, and requires more skill and care. The needle must be placed accurately in the midline of the intervertebral space and introduced just through the ligamentum flavum. This can be identified as the first definite resistance prior to contacting the dura. If no spinal fluid exudes and none can be aspirated with a syringe, the injection can be attempted. There should be no resistance encountered to injection when the needle is placed correctly in the peridural space. From 30 to 40 c.c. of a 2 per cent solution of procaine hydrochloride is the usual amount used and the injection should be made slowly. The site of injection may be any of the usual lumbar or lower dorsal interspaces. The duration of segmental peridural anesthesia generally is one to two hours. The chief advantages of this method, according to Dogliotti, are: (1) absence of danger of diffusion of the anesthetic toward the bulbar and cerebral centers, (2) a reduction of the anesthetized area to an immediate segment of the body, (3) a fall in blood pressure less than that caused by subarachnoid injection, (4) a rather constant absence of nausea and vomiting which in contrast occurs more frequently in spinal anesthesia, (5) the incidence of postoperative lumbar puncture headache is less than 1 per cent, and (6) in cases in which the patients are very weak and debilitated there is a greater margin of safety than there is with spinal subarachnoid block. The disadvantages observed with this method have been failure to obtain adequate anesthesia in the proper region as a result of lack of proper technic or improper diffusion of the anesthetic solution. Furthermore, there is a delay in obtaining anesthesia which is not present in most subarachnoid injections. Peridural anesthesia is not, therefore, recommended as a substitute for spinal anesthesia but as an added procedure which is useful in certain selected cases.

Intravenous Anesthesia

The short acting soluble barbiturates, such as pentothal sodium and evipal soluble, are useful agents for producing anesthesia for short operative procedures. In contrast to the intravenous administration of other barbiturates, such as pentobarbital sodium and sodium amytal, pentothal sodium and evipal soluble both have rapid induction and recovery periods, produce fair surgical relaxation and a minimum of post-

operative restlessness. However, the control of certain agitated psychoses, convulsive or manic states is more satisfactorily accomplished by the intravenous administration of pentobarbital sodium or sodium amytal than it is by the intravenous administration of pentothal sodium or evipal soluble because the duration of the effect of the former is longer than that of the latter.

The details of the administration of pentothal sodium have been described elsewhere,⁸ but in general it may be said that either pentothal sodium or evipal soluble, or any short acting barbiturate, should be administered intermittently, slowly, and not according to body weight. In this respect the intravenous administration of soluble barbiturates resembles closely that of administering ether by the drop method.

Children who are less than twelve years of age for the most part do not tolerate the intravenous administration of barbiturates well because of respiratory depression. Likewise, certain adults who have dyspneic conditions such as asthma or congestive heart disease do not react favorably to intravenous anesthesia. It is absolutely essential that a free airway be maintained in any case in which intravenous anesthesia is administered and it is wise to have a competent person hold the patient's jaw forward so that the tongue cannot fall back into the pharynx and interfere with the exchange of air. In the event that respiratory depression occurs, oxygen and carbon dioxide should be available and administered in the usual manner. Occasionally, it may be necessary to introduce a Magill intratracheal tube in order to maintain an adequate airway in the event that there is marked interference with respiration. The usual methods of nasal or oral intubation are used.

Analeptic Drugs

Under certain circumstances, such as resuscitation of the newborn, and in other conditions of respiratory depression, drugs which stimulate the respiratory center may be used. Most analeptics or restorative agents, according to Wright, have either a peripheral action on the sino-aortic nerve endings, or a central effect on the respiratory center itself. In most instances the agent used has both a peripheral and central effect.

For example, alphalobeline and nicotine in small doses act peripherally and the central ac-

tion of these agents is manifested only when large or toxic doses are used. Coramine administered in small doses will stimulate respiration reflexly but if larger doses are given they act centrally. If coramine is given in too large an amount, convulsions will be produced. It is true that small doses of almost all respiratory stimulants stimulate breathing and large doses tend to produce convulsions. Some of the more commonly used analeptics are coramine, picrotoxin, metrazol, carbogen, icoral, strychnine, caffeine sodium benzoate, and ephedrine. According to Wood, the denarcotization or restorative action of these various agents is probably not the result of a chemical neutralization of the agent producing narcosis or respiratory depression, but is attributable to the increased ventilation or improved circulation. When an intravenous anesthetic with soluble barbiturates, such as pentothal sodium or evipal soluble, is administered, certain analeptic agents may be incorporated in the anesthetic solution as an aid in counteracting the respiratory depressant action of the barbiturate. The amount of the analeptic agent should be small enough so as not to interfere too much with the anesthetic action of the drug.⁹

Comment

It is intended that the foregoing consideration will bring to mind some of the current views and attitudes toward various anesthetic agents and methods of anesthesia. Emphasis has been placed on those agents and methods which have proved to be safe and reliable, and mention has been made of those which are newer and as yet have not been thoroughly investigated but which may prove useful and helpful in time.

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REGIONAL ILEITIS*

O. A. OLSON, M.D.

Minneapolis, Minnesota

REGIONAL ileitis,* or, as it is sometimes called, terminal ileitis, appears to be a comparatively new disease. It was first described by Crohn, in 1932. He presented thirteen cases. Since that time eighteen cases have been reported from the Mayo Clinic. There have been approximately fifty other cases reported in the literature. It is difficult to believe that such a characteristic condition could long have been overlooked at autopsy. The pathologists with whom I have talked have never seen this pathologic condition until the last few years and now it is found quite frequently.

The medical literature on all diseases of the intestines was reviewed, in 1920, by Tretze. He divided all lesions of the large and small bowel into three classes: (1) those due to neoplasms; (2) those due to known specific bacterial agents; (3) benign granulomata. Under benign granulomata he described all those benign, inflammatory, intestinal tumors which are neither neoplastic nor due to specific bacterial agents such as foreign body tumors, chronic perforating lesions, traumas of the mesentery, Hodgkin's disease, late reactions to release strangulated hernia, et cetera. The entire literature was extensively reviewed and it is significant that nowhere in his article was there a description which resembled regional ileitis.

Regional ileitis is a disease of the terminal ileum usually found in young adults, twice as frequently in males as in females. It is characterized by a long standing inflammation resulting in stenosis of the lumen of the gut followed by chronic obstruction and formation of multiple

fistulae. The disease clinically resembles ulcerative colitis. In some of the cases reported by the Mayo Clinic there was a ten years' history. The patient in this report gave a history of abdominal cramps over a period of four years. The disease is characterized by cramps, diarrhea, fever, loss of weight and secondary anemia. Fever is rarely high and the leukocytosis is only slightly above normal. Diarrhea is never so severe as in true colitis. The stools contain mucus and streaks of blood. Tenesmus is lacking, as the rectum is not involved. There is pain over the lower abdomen, which is cramp-like in character, relieved by defecation. A mass can usually be felt in the lower right quadrant. This mass is tender and may be movable. Fifty per cent of the cases have had previous appendectomies. When stenosis occurs, the symptoms of obstruction appear. It is usually confined to the lower abdomen. There is seldom general abdominal distention.

The process starts at the ileocecal valve, which is transformed into a rigid diaphragm. It then gradually extends proximally up the ileum for a distance of eight to twelve inches. In the early stages it may involve the cecum and colon, but this resolves itself until only the terminal ileum is involved.

The disease is characterized by ulceration of the mucous membrane of the affected gut, with inflammation and round cell infiltration of all layers of the bowel, resulting in a marked thickening of the bowel wall. The wall of the ileum may become two to three times its normal thickness. The normal folds of the mucous membrane between the linear ulcers give a cobblestone appearance of the mucosa. The lumen of the gut

*The history of the disease given herein was taken from an abstract entitled "Regional Ileitis" by E. J. Semansky, published December 12, 1935, by the University of Minnesota.

finally becomes narrowed in places, resulting in irregular distortions and chronic obstruction. The intestine proximal to the lesions always becomes greatly dilated and may show superficial tension ulcers of the serosa.

The clinical course runs in four stages:

1. Acute peritoneal irritation, when the disease resembles acute appendicitis.

2. Symptoms of acute ulcerative colitis with ulcerative enteritis and colicky pain, fever, tenderness, diarrhea, anemia and marked loss of weight.

3. Stenotic stage with symptoms of chronic obstruction of the small bowel with a palpable mass present within the abdomen.

4. Fistulæ formation. These often follow drainage for supposed appendiceal abscesses.

In the early stages it is impossible before operation to distinguish regional ileitis from acute appendicitis. There is generalized colic, pain and tenderness in the right lower quadrant. The temperature and white count are elevated. The presence of a mass usually leads to a diagnosis of appendiceal abscess. At operation in this stage, the appendix is found to be normal or may show peri-appendicitis without mucosal involvement. The terminal ileum is greatly thickened, red and blotchy, with marked edema of the surrounding tissue. There is usually free fluid in the abdomen. Sometimes an abscess is found, and, when this occurs, the pus is thick but not foul-smelling. Drainage results in intractable fistula formation.

If the case is advanced to the ulcerative stage, in addition to the symptoms mentioned, there is marked lower abdominal pain, looseness of the bowels, with pus, mucus and blood in the stools. There is marked secondary anemia. The hemoglobin is often as low as thirty-five. Loss of weight and strength also occurs. These symptoms may last for a year or more.

The disease gradually passes into the third or stenotic phase, when the symptoms are those of subacute bowel obstruction of varying degree. There is moderate distension because the obstruction is not complete. At this stage of the disease, a palpable mass is always present in the right lower quadrant. There are cramps and occasional attacks of nausea, vomiting and constipation. The exudative reaction is replaced by chronic inflammatory process resulting in fibrosis, atrophy of the mucosa, stenosis, and, in places,

polypoid hyperplasia. The mesentery is greatly thickened and fibrotic. There is enlargement of the mesenteric glands.

The marked feature of the disease is a tendency toward perforation but this occurs so slowly that it is always walled off. There is never any infection of the general peritoneal cavity but fistulæ form and perforate, usually into the cecum, ascending colon, sigmoid or abdominal wall. When the fistula opens into the colon it leads to symptoms of colitis, often masking the true nature of the disease. In none of the reported cases have fistulæ perforated into the rectum. In this way it differs from granuloma inguinale, which often attacks the rectum. Fistulæ may develop several months after the original drainage operation. The patient reported here had the drainage operation in December, 1934. The fistula closed and remained closed until November, 1936, nearly two years, when the patient returned with an abscess of the abdominal wall in the old incision. True appendiceal fistulæ can usually be closed by excision and inversion of the stump. In the absence of tuberculosis or actinomycosis, any fistulæ which resist simple surgical closure should be considered as cases of regional ileitis.

The disease can usually be differentiated from ulcerative colitis by sigmoidoscopic and barium enema studies. These are negative in regional ileitis because the colon is not involved. A barium meal shows positive findings. There is definite delay of the meal through the distal end of the small intestine. In the stenotic stage this delay is striking. When the large bowel is the seat of fistulous communication one finds true narrowing at this point which may simulate carcinoma. In differential diagnosis one should consider lymphosarcoma, intestinal tuberculosis, Hodgkin's disease, sarcoma of the intestines, and carcinoma of the ileocecal valve. Exact differentiation may be possible only at the operating table or by examination of pathologic specimens. On microscopic section the bowel shows various degrees of subacute and chronic inflammation. There is no evidence of malignancy. Cultures and guinea pig inoculations have failed to show causative organisms.

Treatment.—Anemia should be combatted. Irrigations are of no value since the fluids cannot reach the involved area. Surgical treatment consists of relief of obstruction by enterostomy or

by excision. Complete resection of the diseased segment and the cecum will result in a cure in all patients who survive the operation. This is best done in two stages. The first stage consists of dividing the ileum well above the diseased area

of the terminal ileum were greatly thickened. The ileum proximal to the area affected was enormously distended and the mesentery was involved. An ileostomy was done using the Witzel technic.

Laboratory reports showed the urine to be negative. The blood hemoglobin was 89. The leukocyte count

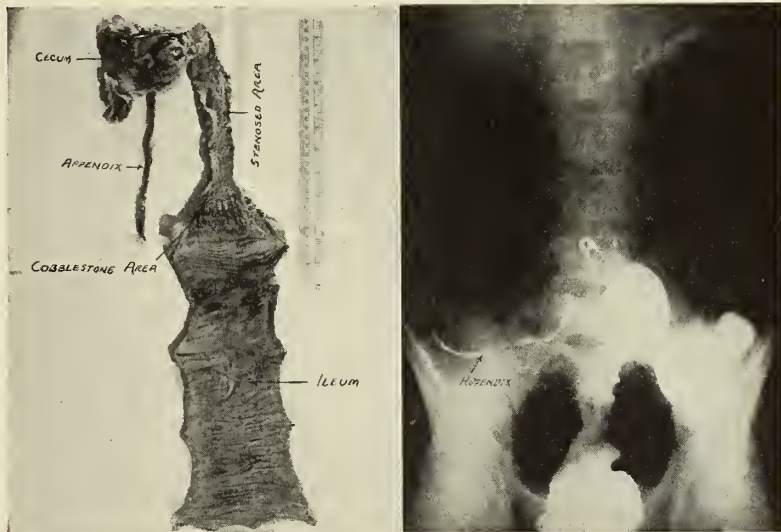


Fig. 1. (Left) The pathological specimen which was arranged by Dr. N. H. Lufkin, pathologist. X-ray diagnosis was made by Dr. Oscar Lipschultz, roentgenologist.
Fig. 2. (Right) The barium filling of a 22 cm. normal appendix.

closing both ends and anastomosing the proximal end to the transverse colon by side-to-side anastomosis. The division of the bowel is said to prevent the further spread of the disease. The second stage consists of a resection of the diseased bowel.

The following is a report of a case of regional ileitis in a patient recently operated upon at the Minneapolis General Hospital.

Case Report

Raymond P., aged sixteen, was admitted to the Minneapolis General Hospital on December 4, 1931. He gave a history of having had occasional attacks of nausea during the past two years. Two attacks were similar to the present one, only less severe. In the present attack, the patient awakened at 2 A. M., December 4, 1936, with pain about the umbilicus, nausea and vomiting, a sensation of fever, and had one bowel movement. There were no urinary symptoms. Upon admission, his temperature was 96.8, pulse 128, respiration 22, and blood pressure was 120/80. The abdomen was tender about the umbilicus and over the right lower quadrant. There was a mass in the right lower quadrant and a suggestion of rebound tenderness about the umbilicus.

The patient was operated upon December 4, 1934, the preoperative diagnosis being acute appendicitis. Postoperative diagnosis was terminal ileitis. Twelve inches

was 17,700 with 91 per cent polymorphonuclear cells. The patient made an uneventful recovery. The tube was removed in one week. He was discharged December 31, 1934, with the wound completely healed.

The patient remained well for one year. He then began to have infrequent attacks of pain in the right lower abdomen, nausea and vomiting. Attacks increased in frequency. Three to four weeks before readmission to the hospital there was more or less continuous, right lower abdominal pain and nausea, also some vomiting. Three days before admission he developed an abscess of the abdominal wall in the old incision.

He was readmitted November 7, 1936. Upon admission his temperature was 102, pulse 120, respiration 20, blood pressure 110/85. The abdomen was tender. There was a fluctuating mass in the old operative scar and a palpable mass in the right lower quadrant which was tender to touch. There was slight abdominal distension. This abscess was incised November 8, 1936. Pus had the odor of colon and cultures showed colon bacilli. Charcoal was given by mouth, which came through the abdominal wound, showing that the abscess connected with the bowel. Several transfusions were given to build him up preparatory to resection.

On November 25, 1936, the mass, consisting of distended and undistended small bowel, including the cecum, appendix, and a part of the ascending colon, was resected. The mass was firmly adherent to surrounding structures and to itself. This mass was exteriorized

and removed. The clamped ends of the cecum and ileum were brought to the outside and the abdomen was closed. Following the operation, the patient's condition was satisfactory. There was some weight loss and the patient suffered from severe anorexia.

Secondary closure of the wound was made on January 28, 1937, and since then the patient has made an uneventful recovery.

The specimen removed consisted of 45 cm. of distal ileum, the ileocecal valve, and part of the cecum. The appendix, which was normal, measured 22 cm. The cecum appeared normal. The distal 16 cm. of the ileum showed marked thickening of its wall and its lumen was the size of a lead pencil. The mesentery measured about 2.5 cm. in thickness. The proximal portion of the ileum was markedly dilated and all of its coats were hypertrophied.

Summary

1. Regional ileitis was first described by Crohn in 1932. Since that time some fifty cases have been reported.
2. It is a non-malignant, inflammatory disease of the small bowel, not easily recognized in its early stages, progressive in course and leading to fistula formation and obstruction.
3. Surgical removal of the lesion is the treatment of choice.
4. A case is reported of a young man recently operated upon at the Minneapolis General Hospital.

MESENTERIC LYMPHADENITIS

A Study Of Sixty Cases

ROBERT E. McKECHNIE, II, M.D.[†] and JAMES T. PRIESTLEY, M.D.[‡]

Rochester, Minnesota

THE finding of enlarged lymph nodes in the mesentery of the terminal portion of the ileum is not uncommon during operations on children and young adults because of symptoms similar to those of appendicitis. The appendix in these cases is usually not acutely inflamed. There is no gross evidence of an enteritis, and the specific cause of the enlarged lymph nodes is not evident. A study was made of sixty cases of this type of nontuberculous mesenteric lymphadenitis diagnosed at operation at The Mayo Clinic.

Etiology

The exact cause of mesenteric lymphadenitis has not been clearly demonstrated. The theory is generally accepted, however, that it is associated with infection somewhere in the body, often in the upper part of the respiratory tract. Recurrent appendicitis does not appear to be the cause of the enlarged nodes because the nodes which are involved are usually not the regional lymph nodes of the appendiceal region.

Signorelli and Hosen, in a study of twenty-five cases, suggested that the cause was abnormal

heterogenous intestinal flora and advised the use of dilute hydrochloric acid, by mouth, to reduce the number of bacteria that pass from the nose and throat through the stomach and into the small intestine. Goldberg and Nathanson cultured material from the throats of eight of their patients and found that *Streptococcus hæmolyticus* was present in every instance. They also made cultures from the nodes which were removed in these cases and found *Streptococcus hæmolyticus* present in one case. They considered this evidence of the relationship between infection in the throat and that in the lymph nodes.

Wilensky and Hahn noted that the lymph nodes most frequently involved are the regional lymph nodes of the part of the intestine which contains Peyer's patches. They compared these discrete regions of lymphoid tissue to those of the tonsils and suggested that the mesenteric adenitis is a regional adenitis secondary to an infection of the Peyer's patches comparable to cervical adenitis which is found in the presence of tonsillar infection.

Heilman, working in Rosenow's laboratory, cultured organisms from the throats of some of our patients who were found to have mesenteric lymphadenitis at operation and inoculated rab-

[†]Now residing in Vancouver, British Columbia, formerly Fellow in Surgery, The Mayo Foundation, Rochester, Minnesota.

[‡]With the Division of Surgery, The Mayo Clinic, Rochester, Minnesota.

bits with the organisms. At the end of seventy-two hours some of the rabbits were found to have enlargement of the lymph nodes in the mesentery of the small intestine. Heilman suggested the possibility that the organisms that had been cultured from the throats had a tropism for the mesenteric lymph nodes and that the infection could be passed from one individual to another through the nasopharyngeal secretions. That this is a possibility is borne out by the studies of Rosenow on the selective activity of other organisms, such as those causing some forms of enteritis and appendicitis. This selective activity of some bacteria for certain groups of lymph nodes might be the explanation of the epidemic forms of cervical lymphadenitis that occur and an analagous situation might exist in cases of mesenteric lymphadenitis.

In the sixty cases studied, a focus of infection was noted in thirty-six (60 per cent). Two of these patients had pyelitis and a third had malaria. In the remaining thirty-three (55 per cent) cases the focus was in the teeth, tonsils, or sinuses. Foci of infection were noted in only 4 per cent of the sixty cases of subacute appendicitis. It is probably true, however, that a search for foci of infection was not made as frequently in cases of appendicitis as it was in those of mesenteric lymphadenitis. In one case mesenteric lymphadenitis developed during an attack of scarlet fever accompanied by a sore throat. In other cases mesenteric lymphadenitis occurred after influenzal attacks.

Age and Sex

The majority of patients in the present series were less than twenty years of age. This is the period of life when lymphoid hyperplasias are most likely to occur. Five patients were in the twenties and one was thirty-nine years of age. The youngest patient was one and a half years of age. An equal number of males and females were affected.

Pathologic Changes

The characteristic pathologic finding at operation is enlargement of the lymph nodes in the mesentery of the terminal portion of the ileum. At times the nodes of the cecum also are involved. This was true in twelve (20 per cent) cases in this group. The nodes may be 0.5 cm. in diameter or they may be so large that they can

be palpated on abdominal examination. The largest node which was found measured 8 cm. in length. The nodes are discrete and sometimes appear to be congested and red, with evidence of a surrounding acute lymphangiitis. Suppuration of the nodes and formation of an abscess are said to occur, but are extremely rare.

Microscopic examination of the nodes does not reveal any characteristic pathologic change. Inflammatory or hypertrophic changes were present in all of the twenty-eight specimens removed for pathologic examination. In no instance was there any evidence of tuberculosis. Cultures of thirteen lymph nodes gave positive results in three cases; staphylococcus was found in one, *Bacillus subtilis* was found in another, and a type of organism resembling bacteroides was found in the third case. The intestine itself generally appears to be normal although there may be some moderate discoloration caused by lymphangiitis. The appendix was coincidentally the site of an acute inflammation in five (8.3 per cent) of cases in this group. The spleen and other lymphoid structures of the body are usually not enlarged. Coleman found that in 90 per cent of the eighty-six cases which he studied there was an associated cervical lymphadenitis. In the present series, only three (5 per cent) of the patients had cervical lymphadenitis.

Symptoms and Diagnosis

The symptoms of mesenteric lymphadenitis resemble those of appendicitis very closely, and clinically there is no way to distinguish one from the other with certainty. Pain, sometimes colicky, was usually the first symptom in the sixty cases under consideration. As in cases of appendicitis, this pain may start in the upper portion of the abdomen and later become localized in the right lower quadrant. Nausea and vomiting were present in a little less than half of the cases and diarrhea or constipation occurred in only about 16 per cent of cases. The temperature and pulse rate were usually only slightly elevated, and the number of leukocytes varied from 8,000 to 15,000 per cubic millimeter of blood. The differential count of the leukocytes was not significant and showed only a moderate increase in the polymorphonuclear leukocytes. Examination of the abdomen revealed that a localized region of tenderness was present

in fifty (83.3 per cent) of the cases. This tenderness was confined to the right lower quadrant in thirty-seven (61.6 per cent) cases. Reflex spasm of the right rectus muscle was found in twelve (20 per cent) cases and an abdominal mass was palpated in three (5 per cent) cases. In most of the attacks of mesenteric lymphadenitis the signs and symptoms are mildly acute, similar to those of acute or subacute appendicitis. In other cases, however, attacks occur over a period of years and are definitely of the chronic recurring type. Thirty-three (55 per cent) of our cases could be classified as chronic mesenteric lymphadenitis. In these chronic cases the symptoms varied from mild recurrent attacks of abdominal pain, accompanied by a slight increase in temperature, to the occasional case in which the pain was severe and was associated with nausea, vomiting, and high temperature. The symptoms were atypical in these latter cases and a positive diagnosis of any kind was difficult to make.

The results of a comparative study of the symptoms in the sixty cases of mesenteric lymphadenitis with the symptoms in sixty cases of subacute appendicitis in which the individuals were less than twenty years of age are given in Table 1. The similarity in the incidence of the various symptoms is evident. The only significant differences are the frequency of previous attacks and the infrequency of reflex rigidity of the rectus muscle in the cases of mesenteric lymphadenitis.

The clinical diagnosis is usually appendicitis, and in forty-eight (80 per cent) cases in this group this was the diagnosis. As evidence that the clinical picture of appendicitis was not clear cut, twenty of these forty-eight diagnoses were qualified by statements suggesting the possibility of the presence of some other condition. In only three cases was mesenteric lymphadenitis suspected before operation. Diagnoses other than appendicitis were: intestinal obstruction, mesenteric tumor, Meckel's diverticulum, and intussusception. In 95 per cent of the sixty cases of subacute appendicitis the diagnosis was unqualified.

Treatment

Even if the true diagnosis is suspected clinically, operation is indicated in almost all cases to exclude the possibility of appendicitis. If this

TABLE 1. SIGNS AND SYMPTOMS OF MESENTERIC LYMPHADENITIS COMPARED WITH THOSE OF SUBACUTE APPENDICITIS

Signs and Symptoms	Mesenteric lymphadenitis (60 Cases)		Subacute appendicitis (60 Cases)*	
	Cases	Per Cent	Cases	Per Cent
Nausea	25	41	34	56
Vomiting	29	48	24	40
Diarrhea	7	11	5	8
Constipation	15	25	7	11
Rigidity	12	20	31	51
Chills	1	1	5	8
Distention	5	8	1	1
General pain	21	35	27	45
Foci of infection	33	55	24	40
Previous attacks	37	61	21	35

*All patients were less than twenty years of age.

policy is not adopted a number of patients who actually have acute appendicitis will be denied early operation because of the difficulties in clearly differentiating these two conditions by clinical examination. In certain cases acute appendicitis and mesenteric lymphadenitis may both be present. When mesenteric lymphadenitis is discovered at operation the appendix is usually removed, even though it is not acutely inflamed, and any exploring that seems indicated is carried out. Subsequent to operation, all foci of infection should be removed and general measures should be instituted to build up the health and regulate the habits of the individual. It is doubtful that operation has any direct beneficial effect on the adenitis; in one case, a second operation was performed, elsewhere six weeks after the first operation, and the mesenteric lymph nodes were found to be still enlarged, with some signs of inflammation. In all probability, the apparent beneficial effect of operation in these cases is the result of rest and care after operation. In the cases of chronic mesenteric lymphadenitis in which symptoms persist, roentgenologic treatment may be of value.

End Results

The risk of operation in the presence of mesenteric lymphadenitis is ordinarily very

light. There was one postoperative death in the group of cases studied. This occurred several weeks postoperatively; the patient was a child, one and a half years of age, who had been ill almost since birth and was in a very debilitated condition at the time of operation. The lymph glands in this case were tremendously enlarged and could be easily palpated through the abdominal wall.

The final results following appendectomy and abdominal exploration in cases of mesenteric lymphadenitis have been fairly satisfactory. We do not wish to infer that operation in these cases affected the natural course of the disease to any appreciable extent. Follow-up studies on forty-nine patients showed that thirty-six (73.4 per cent) had no further recurrence of symptoms. One patient died from causes not related to the enlarged lymph nodes. Recurrent attacks of abdominal distress, usually mild, occurred in twelve (24.6 per cent) of cases. Of these twelve patients, nine had attacks for a period up to a year, one for a period of two years, and two for a period of three years or more following operation. It is interesting that in one of the latter cases abdominal symptoms recurred each time the patient suffered from an acute infection of the upper part of the respiratory tract. It is possible that recurrent or persistent chronic mesenteric lymphadenitis over a period of years may be responsible for the calcified mesenteric lymph nodes that are occasionally seen

during roentgenologic examination of the abdomen.

Summary

Sixty cases of nontuberculous mesenteric lymphadenitis have been reviewed. Various theories of the etiology of this condition have been considered. The most generally accepted theory is that mesenteric lymphadenitis is associated with a focus of infection somewhere in the body, usually in the upper part of the respiratory tract. A comparative study of the symptoms in sixty cases of mesenteric lymphadenitis and in sixty cases of subacute appendicitis has been made, and it has been noted that there are not significant differential points. In view of this similarity of symptoms we do not believe that medical treatment is justified when the appendix has not been removed previously, even when the diagnosis of mesenteric lymphadenitis is suspected, because a definite appendicitis may be neglected if operation is not performed. Follow-up studies showed that 73.4 per cent of patients have no further trouble following operation. The remainder may have subsequent attacks.

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INSULIN IN THE TREATMENT OF SCHIZOPHRENIA*

JOHN R. MEADE, M.D.

Saint Paul, Minnesota

IN 1922 Banting and Best,¹ working on depancreatized dogs, developed an extract of the pancreas which would lower the blood sugar of the dogs and stop their glycosuria. Later they² tried this extract, insulin, on diabetics and obtained the same results. At that time it was thought that insulin would be of use only in the treatment of diabetes mellitus, but since then it has been used in many other conditions. Its most

obvious action and probably one of its most important actions in the body is the reduction of blood sugar. Whether this is brought about directly or through the liver being made able to store glycogen is not the problem for discussion here. Sevringhaus, Kirk, and Heath,⁷ in 1923, found that the extent of the hypoglycemia after the injection of insulin is so variable that the degree cannot be predicted from the dose per kilogram of body weight. They also found that with the increased dosage of insulin both the extent

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and the duration of the hypoglycemia became greater. Insulin, because of its ability to reduce blood sugar, has been used with success to stimulate the appetite in patients following a long and debilitating illness and in patients who refuse to eat.

The uses of insulin are many and varied, and one of the most interesting recent developments is its use in the treatment of schizophrenia. We have known since it was first employed that insulin would cause weakness, coma, and convulsions if a sufficient amount was taken to lower the blood sugar below certain levels. These levels are variously found to be from 70 to 80 mg. per 100 c.c. of blood. Anyone who has treated diabetics with insulin knows that the patients must be warned about insulin reactions as these are often dangerous, particularly if they occur while the patient is at work or in some situation where help cannot be obtained immediately. Most diabetics complain bitterly about repeated insulin reactions. As early as 1923, Carvil, Parsons, and Raphael³ began to use insulin in some cases of mental depression. In 1933 Sakel,⁶ working in Pötl's clinic in Vienna, introduced the method which is used at present. He observed that patients who were morphine addicts and who had received large enough doses of insulin in the course of their treatment to cause them to go into coma or hypoglycemic shock had changed personalities when they again became conscious. He reasoned that as dementia precox is a problem in personality changes, insulin shock might be of some benefit to patients afflicted with this disorder. He worked out a form of treatment for these patients which is essentially as follows: Small doses of insulin are given three times daily and then the dose is gradually increased until the patient is put into insulin shock. The patient is allowed to remain in shock for an hour or an hour and a half, at the end of which time the shock is terminated by the administration of 150 gms. of glucose through a nasal tube.

There are several types of shock which the patient may develop, namely, convulsion shock, dry shock, or moist warm shock. Any other type except moist warm shock should be stopped immediately because its development may cause irreparable damage to the patient. In our experience we have seen different types of shock in the same patient. One patient had a convulsive type in her third shock, after

the first two had been of the moist warm type. She was very restless during all of the shock and had to be watched very closely. Another patient was given three large doses of insulin in one day and went into a state of hypoglycemia from which he did not recover for three days even though intravenous glucose and other measures were used and his blood sugar had returned to normal. At one time during the hypoglycemia he began to develop edema of the lungs and his life was almost despaired of.

Another factor which must be considered carefully in this method of treatment is sensitivity to insulin. Insulin as it comes on the market is made from a combination of cow, sheep, and hog pancreas. A patient sensitive to beef, lamb, or pork, therefore, will be sensitive to the insulin obtained from the pancreas supply obtainable on the market and may develop severe anaphylactic shock instead of the desired hypoglycemic shock.

Katzelbogen and Harms⁵ call attention to the disconcerting fact that the hypersensitivity may not manifest itself at the beginning of the treatment but may appear later on in the course of the treatment. They also state that a given dose of insulin may not cause any reaction on one occasion and later on may result in a severe hypoglycemic reaction. The level of blood sugar has not proved to be a consistently valid criterion by which we may forecast the possible occurrence and severity of hypoglycemic reactions.

Excessive salivation is another factor which must be watched since it presents a menace to a patient in a comatose state.

As very small doses of insulin, fifteen units for example, may cause some individuals to go into hypoglycemic shock, everything must be in readiness for the care of the patient before the treatment is begun.

Glueck⁴ says: "The far reaching manifestations of insulin shock are well known. It is conceivable, therefore, that the deliberate introduction of a profound state of hypoglycemia, with the necessity of exploiting its effects to the furthest possible limits short of endangering the patient's life, as is required in this form of therapy, carries with it a considerable element of danger. No other form of psychiatric therapy requires as much care, skill, and caution in its application as does this. It requires also a type of nursing personnel and hospital organization second to none in efficiency, team work, and

readiness for emergency intervention." Reports in the literature have been noted of deaths during the course of this therapy from coronary thrombosis, necrosis of the pancreas, and pulmonary edema.

In closing, let me emphasize Glueck's statement regarding the danger of this method of treatment and the importance of having a nursing personnel experienced in the handling of these cases.

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INSULIN SHOCK IN THE TREATMENT OF SCHIZOPHRENIA*

FRANK WHITMORE, M.D.

Saint Paul, Minnesota

IN calling attention to the method of treating schizophrenia by producing insulin shock there is no need to be equivocal. By these shocks we are subjecting the patient to a critical physical malady.

The only justification for causing him to undergo this danger is found in the fact that schizophrenia is a permanently disabling disease. Only about 15 per cent of patients recover from it when treated by the customary means such as have been at our command.

The injection of necessarily large doses of insulin creates, in the words of Professor Claude, "anarchy" in the activity of the somatic, neurovegetative, and psychic functions. The risk of producing coma through hypoglycemia is great for the patient, but it also burdens the physician and the attendants, who must foresee and be prepared to meet instant emergencies.

Hoff¹ described the treatment in the Wiener Klinische Wochenschrift of July 17, 1936. We began to use it in September, 1936, carrying out his directions in detail. He divides the procedure into four phases. In Phase I, intramuscular injections of insulin are given in increasing amounts so that as quickly as practical the dose will be known which will throw the patient into shock and coma. Phase II is fixed through the repetition of these deep shocks once daily for six days. On the seventh day no treatment is given, but the patient is observed for any change in the symptoms of his psychosis. The establishment of this day for observance sets up Phase III. The six days of shock and one of rest

are continued until the symptoms of the psychosis have gone through a certain unfolding. Then the deep shocks are stopped although smaller amounts of insulin are given. During this process of reduction, which is Phase IV, the patient is closely watched for signs of his disorder which may recur in this phase when he is hypoglycemic following the injection.

From this description you will see that the crucial period of the treatment in which the life of the patient is imperiled is during Phase II, that is, when he is being thrown into shock and coma.

In this phase the necessary insulin is given in one dose before breakfast and on a fasting stomach. Within a short time the patient shows the usual signs of hypoglycemic shock. In it he perspires freely, his skin feels cold, soft, sticky, and adhesive. He may feel weak, fearful, and express apprehension, but more often he complains of no special sensations. In the time which elapses between the beginning of shock and the appearance of coma, the patient is hypoglycemic. The duration of this hypoglycemic state before the onset of coma varies from three-quarters of an hour to five hours. In this interval the patient shows his individual reaction to the shock. In four of our cases the patients were composed during it, the only signs of agitation being fibrillary muscular movements or occasional paroxysmal jerking of the extremities. In other instances the appearance of shock is followed by changing intensity in mental perturbation, the voicing of a deep foreboding, gradually leading into wild cries and violent physical activity. In three cases the activity took

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the form of a more or less constant writhing of the entire musculature, resembling the torsion spasms observed in diseases of the lenticular nucleus. Two of these people showed, in addition, widely opened staring eyes with a divergent squint. Another patient who was very agitated during the shock wore a good deal of the hair from the back of her head by throwing herself into opisthotonos, as a wrestler might in "bridging." One patient who was noisy and agitated was regularly seen lying on her side with her head extended backward as if she had a meningitis, while clonic contractions of her extremities were evident. Her eyes were widely open and fixed in vacant stare, but showed no squint. One other patient, who was violent, developed convulsive seizures which alternated with deep coma for two days, in which we almost despaired of saving his life (dry shock). The patients which showed violent activity while in shock were all of them so agitated that they had to be placed in full restraint during it. The violence of their exertions of course places an extra load upon the heart. However, the pulse rate seldom rose above seventy beats a minute in any of them, and occasionally a rate as low as fifty-six was noted. The breathing rate was not usually modified excepting when they screamed for a long time. The temperature when taken in the shock was usually subnormal.

Reactions in hypoglycemia, such as described, usually repeat themselves daily, the patient going through the different states with clock-like regularity, so that after the first few the attendant can with a degree of certainty foretell at any given period how long it will be until coma supervenes. The quiet patient may gradually become somnolent and fall into coma as if he were going to sleep. The agitated, noisy ones may suddenly become comatose, or a period of quiet may precede its onset. One active patient displayed catatonic postures before her coma. It will be noticed that the description so far has referred to the physical behavior of the patient.

The number of necessary successive shocks may vary greatly. Some patients require fifty or sixty, while others recover after only a few. If the patient responds to the shocks in the typical manner early in the treatment, he becomes lucid during the hypoglycemic stage. When he is not hypoglycemic he displays his psychosis. If the shocks are followed by improvement, this lucid

period gradually stretches itself over the whole of the time, even when he is free from hypoglycemia, that is, after he is brought out of the shock. Toward the conclusion of the treatment a reversal reaction occurs. By this is meant that during the time when he is not hypoglycemic he is free from psychosis, and in the hypoglycemic period itself he shows his definite mental disturbance (activated psychosis). The treatment is continued when this state is reached until he is sane, even in the period in which he is hypoglycemic; that is, immediately preceding the onset of coma. It is important at this time when the patient is still being thrown into deep shock not to counteract it too quickly or abruptly before coma. If this is done he may become far more disturbed mentally than he was before the treatment was begun, and may remain so. When the patient displays lucidity both during hypoglycemia as well as afterwards, the fourth phase is begun. In it the dosage of insulin is reduced. The patient must be closely watched for the appearance of any signs of his psychosis when he is hypoglycemic following his injection. If he remains free from symptoms, the insulin is gradually reduced and discontinued.

Report of Cases

The first case to be presented in detail is that of a woman thirty-six years of age, whom I first saw in 1931, when she was nervous and sleepless, complained of headaches and found it increasingly difficult to do her work. The sides of her scalp were tender, and she imagined she had a mastoiditis. She recovered from this attack in about four months and went back to work, working steadily until February 24, 1936. She then complained of headaches, difficulty with her work, but in addition to this, even this early, had the idea that her employer was watching her. She did not stop work, however, until June. In this interval she had become increasingly suspicious of everyone with whom she came in contact at her work. Her definite ideas were related to her employer, whom she believed had hired detectives and fellow employees to watch her. Gradually she became more seclusive and reserved except when questioned. She also became more apprehensive, more constantly certain that she was about to be arrested. After stopping work she remained in bed for several weeks at home and during this period was increasingly resistive to all efforts made to handle her. She refused to leave the house at first. Her delusions of persecution grew until she was constantly fighting with her brother and mother, and frequently attempting to run away in order to avoid arrest. She entered the hospital in October, and was given insulin the next day. She received fifteen

shocks. Her psychosis completely disappeared and at the end of this time she was given smaller doses. She had made a complete recovery, resuming work about the first of the year. She has been intermittently employed for a period of two months, and has been working steadily as a bookkeeping-machine operator for the last three weeks.

The second case is that of a man who was first admitted to the hospital in June, 1936, with the history that about six months before, he had lost his job. Following this it was noted that he became morose, secretive, and began to do odd things, such as breaking dishes, throwing violent fits of temper, and tearing up papers and letters. He was placed in a private hospital for several weeks, and at that time showed no improvement. He entered the hospital for the second time on the 3rd of October. Upon questioning, then, he appeared to be quiet spoken and well oriented. He believed his former employer had him fired because he "had it in for him." He felt himself intellectually superior to his associates. He admitted breaking dishes at home to "put his mother on trial" and to "learn to make her take it." He was convinced that he had most of the family responsibility. He occasionally seemed very depressed, refusing to speak. Within the next few days he improved somewhat, but, at times, refused food and laughed in a silly way when nothing humorous had occurred. It was noticed a few days later that he became increasingly seclusive, keeping his head under the bedclothes most of the time and apparently not noticing anything which was going on about him. He was put on insulin, the dose built up rapidly, and he had his first wet shock early in the morning. However, he received another large dose of insulin later in the day which was followed by shock, and later in the evening still another dose also followed by shock. After the last dose he developed an attack which was associated with pulmonary edema, cyanosis, frothing at the mouth and a convulsion. This was combated and the next day he was sent into shock again and in it he developed an epileptic seizure, a rather typical grand mal convulsion. It was necessary to use artificial respiration to revive him from this attack. Subsequently he remained in this comatose epileptic state for two days while every effort was made to revive him. It was learned afterwards that he had had several convulsions previous to his entrance to the hospital, but this fact was concealed when his history was taken. He recovered from the convulsive state gradually. He was intensely weak and regained his strength very slowly. However, his psychosis had undergone a marvelous improvement and he left the hospital after six weeks. A few days after leaving the hospital, he took employment with his brother-in-law, driving a delivery truck. He kept the route going, continued work until the latter part of February, when he stopped and attempted to find a better job. During this interval since February, he has been causing trouble at home. He is abusive and argumentative, especially with his mother. His father came in to see me about a week ago, stating that he wished

I would tell him to go to work again, because he thought he was less troublesome when employed. When the patient was interviewed there was no psychosis present, but he displayed a certain air of superiority which was disturbing. He is amenable to certain type of handling and he decided it might be just as well if he went back to work.

A third patient entered the hospital November 11, 1936, at the request of a friend. He had been in good health until a few days previous to admittance. The evening before he entered the hospital he shattered his mother's car by firing a shotgun at it. The same day he had rung the church bell at 3 A. M. because he had lost his dog. Upon questioning the patient in the hospital, he said repeatedly that he wanted to go back to get his dog, and added that he could get the dog if his mother would not stop him. He said she had been holding him down for twenty-seven years. The following day the patient said he heard a thousand voices and that he thought the other patients believed him "nuts," but that he convinced them he was not. On admission to the hospital he was violent and had to be placed in full restraint. He fought these lustily; he was noisy and sang in a very loud voice. He cursed, threw water and spit at the attendants, and constantly tried to get out of restraint. For the first few days he called frequently for his dogs and for a priest to come in and clean him up, and at one time called for fifty million Frenchmen to come and help him. He claimed he had complete charge of all the patients in the room. After about a week in the hospital he became more co-operative and could be allowed out of restraint. At this time he talked rationally with his wife about his condition and asked for her pardon for his conduct. However, he still had ideas in regard to his dog and felt that he had been told by a "voice" to shoot his mother's car. Underneath his superficial adjustment he was still delusional and hallucinated. He was placed on insulin which was quickly increased to the shock dose. He was sent into shock and coma fifteen times. By this time his psychosis had entirely disappeared and his insulin was reduced and discontinued. He has not been working because he cannot find a job, but he has no psychosis at present.

A fourth case is that of a young man who had been peculiar since puberty. He was nineteen years of age. He was stubborn, acted superior, was quarrelsome, and had attempted suicide by drowning. He had a simple schizophrenia. He was treated with fifty-four shocks and shortly after the fifty-fourth shock, met death accidentally.

The fifth patient developed a psychosis while under my care. She was thirty-two years old and was troubled with hallucinations and delusions. She believed her aunt was up in the ceiling talking to her. She also felt that her family was always outside of the door conspiring against her to have her taken to the State Hospital. These symptoms were present for about three months before the insulin treatment was started. She received ten shocks in all. At the end of this time her psychosis had improved. She went home to live with

her husband, who in some manner or other greatly irritated and disturbed her. While at home she became very emotional. After she had been there a month, she said that occasionally when she was upset she had peculiar ideas like those she had had before she received the insulin. She has not come in for about two months, but when she was last seen she told me she was divorcing her husband and hoped that things were going to be better for her.

The sixth case is that of a young man twenty-five years of age who had been peculiar since puberty, and for the last three years had been exceedingly worried and anxious. About a year ago he entered the State Hospital as a voluntary patient, where he seemed to be making a nice recovery. He decided, before fully recovering, that he would go to a CCC camp in the north woods. He felt that he would get along better if he could adjust himself there rather than in the hospital. He went to camp for six weeks and found that the boys did not like him and this created anxiety as to whether or not he was as capable as he thought himself to be. He left camp, came down to the hospital and asked to be admitted. On entrance he paced constantly, asked questions, was querulous, fretful, worried and doubtful. After three weeks in which he showed no improvement, insulin treatment was begun and he was given thirty-four shocks in all. After this he decided he felt better and was less tense and worried, and asked to have them stopped. While he was not completely cured, he felt that the treatment had improved his condition to a large extent. When the insulin was stopped he was permitted to go home. It was impossible for him to live at his mother's home because his father was dying there from cancer. His mother is an epileptic. So from the hospital he went to visit an aunt in Minneapolis, where he was unable to make an adjustment. He could not find work to support himself, so he decided to go back to the State Hospital voluntarily and take advantage of the protection the institution offered him.

Case 7 is that of a woman twenty-four years of age who had been sick approximately three months. Her psychosis occurred while she was pregnant. She was put on insulin and received thirty-two shocks. So far there is little improvement.

Case 8 is that of a woman thirty-four years of age who has been sick for about four years. She said she heard her dead mother's voice directing her every action. She constantly pleaded to be permitted to go home. Whenever she becomes nervous she has a startling mannerism, she hiccoughs and coughs at the same time so loudly that she can be heard all over the floor of the hospital. She was placed on insulin treatments and given sixteen shocks. After the sixteenth shock she ran away from the hospital. She has been seen at home since, where she seems to be adjusting well and is free from the symptoms of her psychosis. Her eructations have ceased.

The patients in this series spent an average number of forty days in the hospital under treatment.

Hoff¹ reports an average of fifty-five days in the hospital for his patients taking insulin shock treatment.

Of the six patients who have completed the treatment, four recovered and two improved. A seventh died accidentally. Three are still under treatment. Three of the patients who recovered were sick four months, eight months and three weeks, respectively. The fourth was sick four years. All of these cured patients showed, as symptoms of their disease, hallucinations and delusions. Hoff¹ also stresses this point, that is, that these symptoms respond to the treatment.

The statistics of recovery according to Muller and Munsinger,² covering 300 cases seen in Vienna and Switzerland, and on which they reported at the Paris Symposium in February 1937, were grouped according to the duration of the disease.

Group I: Disease of less than six months' duration: 89.8 per cent improved, including 73 per cent completely cured.

Group II: Disease of more than six months' duration: 80 per cent improved, including 50 per cent cured completely.

Group III: Disease of more than eighteen months' duration: 45 per cent improved but 0.5 per cent cured.

These figures are in marked contrast to the statistics usually quoted regarding the remissions in schizophrenia.

As to the manner in which the treatment influences the disease, no one has as yet offered a satisfactory explanation.

All men who have had experience with mental disorders have, however, seen intercurrent disease favorably influence schizophrenia.

An example of a case of this type is a patient who was treated for a violent catatonia, by inducing somnolence with somnifene given intramuscularly. The treatment was entirely unsatisfactory until she developed an extensive abscess under the fascia lata. She recovered promptly from her psychosis following the infection.

It may be that the treatment with insulin functions as an intervening illness, for certainly the deep shocks are in themselves a grave disease.

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DIATHERMIC TREATMENT IN PERIPHERAL ARTERIAL INSUFFICIENCY

GARDNER S. REYNOLDS, M.D.

Ah-Gwah-Ching, Minnesota

THE following article is based on the writer's clinical observations and experiments with diathermy in arterial insufficiency over a period of eight years. The work, at least in some aspects, is new, and therefore extensive reference to the literature is impossible.

The American literature contains few adequate reports concerning the use of diathermy in the treatment of arterial insufficiency.

Chevalier and Chezet⁷ report excellent therapeutic results.

De Kraft⁸ says, "The action of diathermic currents on the walls of the blood vessels is conducive to improvement in their nutrition. . . . Restoration of at least a part of the elasticity of arteries has been observed, as well as improvement in their caliber."

Barbash¹ reports consistently good results in the use of medical diathermy in gangrene. He especially emphasizes its use in diabetic gangrene.

Recently Veal and McFetridge¹¹ have studied cases of intermittent claudication by thorotrast injection of the arteries. Most of these cases were clinically typical cases of arteriosclerosis. These studies showed: (1) obliteration or diminished lumen of the larger arteries; (2) diminution in the number of the larger arterial branches to the muscles with uneven and inadequate distribution; (3) inadequately distributed new collateral blood supply. They state that the process begins in the muscular branches, which become short and clubbed, with eventual progression to the larger arteries, which in turn become narrowed and then obliterated. They conclude that there is a change in the nutrition of the muscles. They show the arteriograph of a patient after treatment, noting some increase in the lumen of the larger arteries and a more adequate distribution of the collateral circulation.

However, Buerger,⁶ speaking of postural exercises, says, "This method does far more to improve the circulation than either the application of superheated air (so-called baking treatment) or the diathermic current." He states further regarding diathermic treatment, "This is an ex-

cellent method of obtaining the effects of heat upon deeper parts, and is particularly applicable to the early cases, especially those in which intermittent claudication is the most marked symptom, and in those patients in which ambulatory treatment must be carried out. In the presence of inflammation, migrating phlebitis, ulcers or gangrene, it does not seem to be well borne or beneficial. The seances should last from twenty to twenty-five minutes."

We do not agree that gangrene or ulcers are contradictions to diathermy. Rather in our experience they are definite indications. Neither do we feel that twenty to twenty-five minutes is adequate for a diathermic treatment. It has been shown, for example, by thermocouple measurement, that forty minutes are required to raise the temperature of a knee joint by diathermy. A proper diathermy treatment, however, affects the circulation for some time after discontinuing the current, thus in effect prolonging the treatment. This is more particularly true if the extremity is wrapped in woolen blankets after treatment. The local hyperpyrexia is terminated eventually, of course, by the circulation, the rapidity of temperature decrease being in proportion to the adequacy of the circulation, assuming that external heat loss is kept to a minimum.

Kovacs,¹⁰ in discussing peripheral circulatory disturbances, says: "Electrical measures, diathermy and galvanism are used to relieve pain and spasm or to bring about active hyperemia and better nutrition." Concerning thrombo-angiitis obliterans, he says, "The lack of circulation is responsible for the severe attacks of pain and later the total occlusion of blood vessels leads to various forms of gangrene."

"Diathermy is undoubtedly beneficial in early cases, it controls the pain and will gradually bring about a functional restoration. . . . As a rule these patients tolerate only a very moderate amount of heat, possibly not more than 300 to 500 ma. The current may be applied for one-half hour or more. In placing the electrodes it is not necessary to include the parts where there is

circumscribed pain, the toes, for instance, for the affected parts are very sensitive to even moderate direct heating. The speeding-up of the circulation of the rest of the leg is sufficient to bring about the desired improvement in these peripheral parts." We agree with Dr. Kovacs.

Technic

Our technic of treatment is as follows: The patient is seated in a comfortable chair with the knees extended beyond a right angle. Both feet are placed in contact with soaped metallic foot plates. These foot plates are insulated from the floor, as are the connecting cords when necessary. (Some machines will show up considerable leakage through the insulation of the cords if special precautions are not taken.) The heel and longitudinal arch must be insulated by means of a folded towel or other insulating substance. The insulation extends up to the transverse arch. This is a very important detail, as otherwise the path of lesser resistance is directly up through the heel and along the Achilles tendon. When the current follows the latter path, the foot is poorly heated, and discomfort may arise in the ankle from the overheating. It is immaterial whether cast foot plates or block tin is used. The patient should be connected in series with the high voltage terminal of the machine, which should be one of ample capacity.

After assuring oneself of the correct set-up, the current should be turned on slowly and increased very gradually, taking care not to overrun the maximum tolerance during the early part of the treatment. Clinical experience with the treatment is of considerable aid in estimating in advance the rapidity with which the current may be increased. The history and physical findings are also of great value in this regard. It is desirable to obtain a rough estimate of the maximum tolerance of the extremities during the early part of the treatment. We find that a lower extremity normally has a tolerance of 600 m.a., and an upper extremity of 200 m.a.

Treatment must be given daily at first, sometimes even twice a day. Treatment two times a week or at longer intervals is likely to be unsuccessful. Clinically, when it seems that the maximum improvement has been obtained, the vascular improvement already obtained may be retained by a treatment frequency of once or twice a week. The starting dose is 60 to 75 per cent of

the *tolerance* and is increased slowly. The occurrence of moderate pain during treatment or of superficial paresthesias of the fingers or toes are signs of improvement. Even severe discomfort occurring early in the treatment must not necessarily be considered to be an unfavorable occurrence. It is apparently due to the increased circulation in an area which has previously become accustomed to an inadequate blood supply. When these symptoms occur, however, it is well to be conservative as to the diathermic dose for a few days, but treatment should be continued.

Raynaud's Disease

L. L., female, aged thirty-five, on December 29, 1931, complained of a dead feeling in the hands. There was a history of numbness and tingling of the fingers the previous spring which cleared up during the summer, but returned with the cooler weather of the fall. The patient stated that there was a very marked blanching of the hands at times of emotional upsets, especially when she cried. Her grandfather died of angina pectoris.

The examination was essentially negative except for constricted capillaries of the finger nail bed. The blood pressure was 110/70 at the time of first examination. The diathermic tolerance test showed a normal arterial dilatability of the right hand and 75 per cent of normal in the left. The area of maximum temperature reaction, as might be expected from the test, was in the left hand and most marked in the fingers. Therefore, with a normal diathermic tolerance in one hand and 75 per cent of normal in the other, we concluded that there was only a small amount of organic disease, and that confined to the left hand. Inasmuch as the greatest heat was observed in the fingers, we concluded that whatever organic involvement was present was confined to the smaller arteries.

The patient was treated with diathermy only twice a week for two months. There were few objective signs of disease, so there were few objective signs of improvement. Her diathermy tolerance, however, increased to normal in the left hand, suggesting an improvement in the early organic condition in that hand, probably due to the development of adequate collateral circulation. The capillary findings too became normal. Subjectively the patient stated that the cramps formerly occurring in the forearm had disappeared. The hands and fingers remained warm.

Buerger's Disease

In Buerger's disease we find a definitely diminished diathermic tolerance which increases slowly under diathermic treatment. This indicates, therefore, an organic lesion of the peripheral arteries. This diminished diathermic tolerance apparently parallels a clinically de-

creased arterial supply. Two case histories illustrating these findings follow:

N. H., male, aged thirty-one, had suffered for seven years (since 1924) from sensitiveness of his feet to cold. He also had numbness and tingling of the toes. His feet were frozen in December, 1924, and some of his toes were amputated. Later one toe became gangrenous and dropped off. He later developed intermittent claudication. Two years previously his fingers became sensitive to cold. Blanching of the finger-tips was said to have occurred even in the summer. There was no local resistance to infection.

Beginning in April, 1931, the patient was treated with typhoid injections and diathermy. At this time the fingers were semi-gangrenous throughout the distal half. The diathermic tolerance was at first about one-third of normal, thus being, as judged by past experience, in the zone of potential amputation. Both hands and feet were treated morning and afternoon with the result that both began to improve clinically and the diathermic tolerance reached 50 per cent of normal for the feet in one month, while the hands reached 50 per cent of normal in three months. In five months the tolerance of the hands had reached 75 per cent of normal while the feet showed 66 per cent of a normal diathermic tolerance. This is explained by the fact that the hands were treated more intensively during this period than the feet. During this period the dry gangrenous areas separated, the color returned to the fingers, the ulcerated areas healed, and extreme sensitiveness to cold disappeared.

Except during the first month this patient was unable, for financial reasons, to receive treatment more often than two or three times a week, more commonly the former. His tolerance is now 90 per cent in the hands, and 75 per cent in the feet. The improvement clinically has closely paralleled the increase in diathermic tolerance. The treatment was spread over a period of a year. The technic mentioned in this article was closely followed.

* * *

W. C., male, aged forty-six, developed, in 1922, a blood pressure of 190/115 under intensive office work. Previous to this there were suggestions of anginal symptoms. In 1926, intermittent claudication appeared. The history of bilateral amputation of his father's feet seemed ominous. In July, 1926, diathermy at intervals of a week was instituted for a total of eight treatments, (not under the author's supervision). Then followed an interval out of town for six months during which time he was symptom-free. Intermittent claudication then returned in March, 1927. In 1929, a total obstruction developed in one of the smaller arteries of the calf. During this general period the diathermy treatments were given for short periods of fifteen minutes (not under the author's supervision).

Treatment was begun with the present diathermy technic in March, 1929. The patient's diathermic tolerance in the lower extremities at that time was about 66 per cent of normal. He was treated then with 200

ma. for 45 minutes daily for several months without much objective evidence of improvement. Subjectively, though, the patient felt that the symptoms were less severe. He then took a trip in the Tropics. On return, he purchased a diathermy machine and continued daily treatments at home. In 1931, his diathermic tolerance in the lower extremities was about normal. This paralleled his clinical condition both subjectively and objectively. The intermittent claudication had disappeared. He was then able to walk a reasonable distance without discomfort. He eventually died of coronary thrombosis.

Arteriosclerosis

In arteriosclerosis other findings, of course, make the diagnosis. It is interesting to note, however, that there is a decreased diathermic tolerance which also closely parallels the clinical history. Improvement under treatment, however, is slower and less complete than in Buerger's disease.

T. H., male, aged sixty, in February, 1931, could not walk more than two blocks without having to stop and rest. Two or three holes of golf was his limit. His left foot was frequently cold. Capillary studies showed decreased capillary flow but were otherwise normal. There was no increase in the local blood supply to the feet after typhoid injection and reaction. Aceoline injections were discontinued and return of the intermittent claudication was experienced.

On June 25, 1931, diathermy was begun. The diathermic tolerance was 33 per cent. Since then the tolerance of the legs increased to about 70 per cent. The clinical improvement paralleled this improvement in the diathermic tolerance. The patient is now living a fairly normal existence for a man of his age, and the diathermy treatments are given at irregular intervals. His intermittent claudication has practically disappeared.

Discussion

We find that there is an arterial reserve function or dilatability comparable to the functional reserve of the heart, and that when a heat load is impressed upon an extremity, the arterial system under these conditions seems to dilate to the maximum of its capacity before damage from overheating is permitted to occur. When the application of diathermic heat is continued the circulation of the extremity is improved. In Raynaud's disease the improvement is thought to be due to relaxation of the arterial wall with restoration of the normal lumen, while in arterial sclerosis the improvement in arterial circulation is probably due primarily to the establishment of an adequate circulation. In Buerger's disease it is probable that both the lumens of the original vessels are improved and an adequate collateral circulation established.

We feel that diathermy applied in the manner described is the best *local* therapy for arterial insufficiency of the extremities. It is definitely reconstructive and the effects appear to be lasting. In many cases of organic arterial insufficiency this method of diathermic treatment is almost specific.

Arteriosclerosis shows less improvement with this method of treatment than the other two types of arterial insufficiency. The patchy type of arteriosclerosis shows greater improvement under this treatment than the more uniform type. Patients who are of middle age or older and in whom an incipient arteriosclerotic gangrene is evident in the extremities should not be treated by diathermy if their tolerance is down to or below 40 per cent of normal. In such cases the gangrenous process develops at a more rapid rate than can be counteracted by diathermy treatment.

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THE PROGNOSTIC VALUE OF THE COLD TEST IN PREGNANCY*

JOHN FRANCIS BRIGGS, M.D.

Assistant in Medicine, University of Minnesota

and

HARRY OERTING, M.D.

Assistant Professor of Medicine, University of Minnesota

Saint Paul, Minnesota

SUFFICIENT evidence has accumulated to establish the validity of the cold test in clinical medicine.^{1,2} To date its use has been largely of academic interest, but gradually it is assuming a rôle of importance in actual clinical work. Because of the apparent ability of the cold test to determine vasomotor irritability, its use has been limited to the study of hypertension, and as a result significant data have been obtained to suggest that the test can determine prehypertensive constitutional defects.^{1,2,3}

Inasmuch as some of the eclampsias represent a hypertensive phenomenon, it was felt that the cold test could prove of importance in the prenatal period. It was realized that it would only be of value in the early recognition of prehypertensive types, and that toxemic states other than those of a hypertensive nature, could not be recognized by the test. Eclampsia as a result of nephritis has a different physiological basis than

eclampsia arising from a hypertensive constitutional defect. In our experience, toxemia of pregnancy due to essential hypertension was a reversible process, until repeated vasomotor insults established a permanent hypertension. Despite the reversible feature of the process, the toxemic state is of a serious nature and often demands heroic treatment to alleviate the condition. If it were possible to establish the existence of latent hypertension in pregnant women, the prenatal care could be adjusted so as to easily recognize the person predestined to hypertension by her vasomotor responses. Thus forewarned, ample time would be had to administer properly therapeutic measures to relieve or ameliorate the condition.

With this in mind a study was undertaken at the Ancker Hospital to determine the vasomotor responses of pregnant women to the stimulus of cold. The patients were not selected, nor was any attempt made to segregate them into

*From the medical service of Ancker Hospital.

early or late pregnancy. The cold test was performed in the usual manner and then the patient followed through until the end of pregnancy. Wherever possible, an attempt was made to discover the existence of hypertension in the maternal parents. It was assumed that hypertension existed in those instances where parental deaths occurred suddenly in middle life as a result of either cardiac or cerebral accidents. As a result of this study, the following data were obtained.

The cold test was applied to 233 consecutive patients entering the prenatal clinic. Of this group 137 patients were multiparas and ninety-six were primiparas. The ages varied from sixteen to forty years, with the largest number of patients falling in the group twenty-two to twenty-eight years. There were ten colored women in the group, and all the patients belonged to the welfare class.

From a study of the family history it was found that ten patients had both a maternal and paternal hypertensive background. In these cases, the existence of parental hypertension was corroborated by clinical examination. Forty-four patients gave histories wherein one or the other parent suffered from hypertension. It was in this group that cardiac and cerebral accidents were assumed to be of hypertensive origin; it was of course recognized that such an assumption is liable to wide error.

At the time of the cold test study, thirty patients were in the ninth month of pregnancy; ninety were in the eighth month of pregnancy; forty-eight were in the seventh month of pregnancy; twenty-five were in the sixth month of pregnancy; ten were in the fifth month of pregnancy; fifteen were in the fourth month of pregnancy and fifteen were in the third month of pregnancy. There were no instances of pregnancy earlier than the third month. In no instance could we find any influence of the length of pregnancy on the cold test response. The reactions were identical to those obtained in non-pregnant groups. In this series we determined to group them as to their family history of hypertension.

In the group without familial hypertension, only two patients were found to give an exaggerated response. In those instances where one or the other parent was hypertensive, twenty-one

were normal reactors, ten were hypo-reactors, and thirteen were hyper-reactors. Of ten patients who gave a familial history of hypertension in both parents, all gave a hyper-reactor response.

At the end of delivery only two individuals in the normal reactor group were found to be toxemic. The toxemia in these instances was due to an underlying chronic glomerulo-nephritis. No other individual in the normal reactor or hypo-reactor group gave evidence of toxemia that could be related to essential hypertension.

The hyper-reactors in the group wherein no familial history of hypertension was obtained, showed no evidence of toxemia at the end of pregnancy.

Of the thirteen hyper-reactors giving a history of hypertension in one or the other parent, ten had normal blood pressures when delivered. The remaining three came to term with elevated blood pressures and one with signs of toxemia.

Mrs. J., aged thirty, gravida II, normal delivery. Cold test at seven months: blood pressure 122/78, 156/106, 150/100, 140/94, 132/80. Blood pressure at eight months 174/100. Blood pressure at nine months 188/100. Urine, albumin plus one. No other signs of toxemia. Blood pressure at one month postpartum 136/80.

Mrs. A., aged twenty-seven, gravida III, spontaneous delivery. Cold test at seven months: blood pressure 116/74, 142/94, 142/90, 136/90, 140/80. Blood pressure at the end of the eighth month, 156/100. Blood pressure at the end of pregnancy, 166/100. No other signs of toxemia. Urine negative. Blood pressure two weeks postpartum 118/76.

Mrs. T., aged twenty-four, gravida III, spontaneous delivery. Cold test at sixth month: blood pressure 116/60, 142/80, 156/84, 150/80, 148/92. Blood pressure was normal until eighth month when it rose to 180/110 and remained at this point until labor occurred. Patient developed headaches, scotomata and scanty urination. The eye grounds showed Grade I vasospastic arterioles. Edema Grade II. Urine revealed albumin three plus. At one week postpartum blood pressure was 126/80.

In the group where both parents suffered from hypertension, all the patients were hyper-reactors and nine of the ten individuals comprising the group showed definite alterations from normal at the end of gestation.

Mrs. N., aged twenty-one, gravida II, spontaneous delivery. Cold test at fourth month of pregnancy: blood pressure 140/90, 164/110, 146/110, 136/76, 140/98. Blood pressure gradually rose to 185/110 at the end of the ninth month. Urine revealed four plus albumin. Edema

was generalized. The eye grounds revealed arteriolar spasm. The patient was treated as a pre-eclamptic and carried through to term. Blood pressure one week postpartum was 136/80.

Mrs. P., aged twenty-eight, gravida II, delivered by cesarean section. Cold test at seventh month: blood pressure 140/96, 162/100, 142/100, 148/100, 148/100. Blood pressure rose rapidly to 225/100 at the 9th month of pregnancy. Urine, albumin four plus. Edema three plus. The eye grounds revealed severe arteriolar spasm with edema of discs and retinitis. Blood pressure at two weeks postpartum was 150/80.

Mrs. J., aged forty-seven, gravida II, spontaneous delivery. Cold test done at the eighth month: blood pressure 130/64, 140/72, 150/72, 146/70, 144/70. The blood pressure at the ninth month had risen to 168/98. There were no signs of toxemia. Blood pressure two weeks postpartum was 142/70.

Mrs. C., aged thirty-eight, gravida X. Fully developed eclampsia treated by Stroganoff method. Cold test blood pressure 148/94, 168/94, 144/90, 146/90, 146/90. Blood pressure increased at the eighth month and finally reached 220/100 at the ninth month. Patient had a fully developed toxemia, suffering from convulsive seizures despite Stroganoff regime. Dead fetus was delivered two weeks before term. Last two pregnancies were marked by eclamptic phenomena. Eight weeks postpartum blood pressure was 146/90.

Mrs. H., aged twenty-five, gravida I, spontaneous delivery. Cold test at six months: blood pressure 108/76, 126/90, 120/80, 124/84. Blood pressure remained within normal limits until end of the eighth month; a gradual elevation occurred in pressure until it reached 178/110. No signs of toxemia. Blood pressure one week postpartum was 138/80.

Mrs. W., aged twenty-seven, gravida II, premature spontaneous delivery at the eighth month. Cold test at fourth month: blood pressure 140/80, 156/80, 160/90, 152/80, 150/80. Blood pressure rose until the eighth month when it reached 170/110. Urine albumin four plus. Edema grade II. Spots before eyes. One week postpartum blood pressure was 145/80.

Mrs. C., aged twenty-six, gravida I, spontaneous delivery. Cold test at sixth month: blood pressure 132/86, 148/82, 164/90, 150/70, 144/90. Blood pressure underwent gradual increase until the ninth month when it reached 180/100. Urine, albumin four plus. Edema grade II. Eye grounds revealed moderate vaso-spasm. One week postpartum blood pressure was 145/80.

Mrs. H., aged twenty-four, gravida II, spontaneous delivery. Cold test at seventh month: blood pressure 140/90, 160/108, 152/100, 148/96, 146/100. Blood pressure rose suddenly in last half of the 9th month reaching 170/120. No other signs of toxemia.

Mrs. P., aged twenty-eight, gravida II, spontaneous delivery. Stroganoff treatment. Cold test at eighth month: blood pressure 128/78, 146/96, 136/98, 126/84, 130/86. Blood pressure suddenly rose to 200/120. Fully developed eclampsia, having one convulsion prepartum.

Summary

Cold tests were done on 233 consecutive routine prenatal patients. As a result of this test, it was found that

1. Only two hyper-reactors were found in the group with no familial history of hypertension.
2. In those instances where one or the other parent had hypertension, the offspring gave hypotnormal, normal, or hyper-reactions.
3. The offspring of pure hypertensive families always gave hyper-reactions.
4. No cases of toxemia of pregnancy that were of hypertensive origin occurred in the normal reactor group. Toxemia of nephritic origin did occur twice in the normal group.
5. Three cases of hypertensive toxemia with reversal of blood pressure to normal occurred in the one parent hypertensive series.
6. Nine cases of hypertension and hypertensive toxemia occurred in the pure familial hypertensive series.
7. Of the combined hyper-reactor groups only eleven patients escaped elevated blood pressure at the end of gestation.

Conclusion

Realizing the inadequacy of the number of cases studied, no definite conclusions can be drawn except to suggest that toxemia occurring upon a hypertensive background may be pre-terminated by means of the cold test.

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CASE REPORTS

USE OF ZINC PROTAMINE-INSULIN IN DIABETES MELLITUS

G. KASTEN TALLMADGE, A.M., M.D., Ph.D.

Marquette University School of Medicine

Milwaukee, Wisconsin

SINCE the published reports of cases of diabetes mellitus treated with protamine-insulin are few, it has seemed worth while to add to the data available a report of a case which offered an unusual problem.

The patient was an Aryan male, thirty-three years old, married, and having one son of eleven years. There was nothing worth notice in the family or personal history. At the age of twenty-eight the classic symptoms occurred and a diagnosis of diabetes mellitus was made. The usual treatment by diet and insulin was instituted, and the patient did fairly well for six years. Then an exacerbation occurred, which was combated successfully; however, the diabetes now proved much more difficult to control. The pancreatic function was highly variable and always greatly impaired, and a balanced diet which contained 110 grams of carbohydrate permitted wide oscillations from 180 mg. per cent in the blood-sugar ratio. This was a bare maintenance diet and had to be balanced by 42 units of insulin in the morning and 20 at night. Considering the magnitude of these doses, the therapeutic margin was very narrow; mild coma or mild shock could not always be averted. In addition to this, the patient became frightened. He had been taught to increase the dose of insulin during periods of excitement, fatigue, respiratory infections, et cetera, or when he violated his diet, but now he fell into the habit of increasing it whenever he became apprehensive. He seemed to be possessed of a clinging fear of diabetic coma, to escape which he fled into what he conceived to be the lesser evil, insulin shock. In spite of all that could be done to emphasize the fact that insulin is a potent drug, and that great caution should be exercised in increasing the dose, he would follow the least violation of his diet, the least exertion, the slightest catarrh of the nose, with six or eight additional units—too large an increment—and promptly go off into a condition of shock from which it became increasingly difficult to arouse him.

This state of affairs had continued for about two years when, upon a festive occasion in which loss of sleep, excitement, a very hot summer evening, and a violation of his diet were involved at once, he gave himself such a dose of insulin that three days of treatment in the hospital was necessary just to restore him to consciousness. After this episode he was kept in the hospital for six weeks in order that an entirely new regime might be instituted to terminate the unsatisfactory state of affairs which had existed before. New studies were made of the urine and blood, a new diet was devised, and a new kind of treatment was begun in the use of protamine-insulin. During the last two weeks of this period of reorganization the patient was allowed to go out whenever he pleased, being required to report to the hospital only for meals and at night. When finally he was permitted to return home it was found that a maintenance diet needed the addition of 44 units of protamine-insulin in the morning and 28 in the eve-

ning. This regime had proved entirely satisfactory for a month, and had not needed to be altered.

But at three o'clock, the second night after he had returned home, he was found in a state of severe insulin shock. He was roused from this by repeated doses of orange juice and sugar administered, with extreme difficulty, by his wife. He felt well enough during the day, but toward six o'clock in the evening he went into mild shock. He was given orange juice and candy, and was restored without difficulty.

His condition at this time is illustrated graphically in Chart 1. It was evident that the diet-insulin ratio which had been worked out so painstakingly and had proved so satisfactory would not apply to his home conditions. He was getting too much protamine-insulin, and it was thought—erroneously—that some pancreatic function was being revived. Indeed, the insulin shocks seemed encouraging. The dose of protamine-insulin was reduced as judiciously as possible, the diet remaining fixed, until the condition shown in Chart 2 was attained. The morning dose could not be reduced below 36 units without the appearance of glycosuria during the day, and this caused the patient to lose weight at once. The evening dose was halved, but the patient still had his insulin shock every morning, although at a later hour and with less severity. It was never possible entirely to prevent this early morning shock by administering less insulin or postponing the evening meal; the only way in which it could be averted was to have the patient set his alarm for two o'clock, get up, and take some orange juice and candy. The loss of sleep which this caused soon told on his general condition. Lessening either the morning or the evening dose of insulin, or both, caused a severe glycosuria during the day without averting the early morning shock; increasing either or both doses caused the glycosuria to disappear, but required that the patient get up in the middle of the night to eat carbohydrate or else suffer a severe shock early in the morning. After endeavoring fruitlessly for two months to adjust the treatment to the patient, during which time he lost as much as 110 grams of sugar during twenty-four hours and, quite naturally, suffered from insulin shock during the same period, the protamine-insulin was given up and regular insulin used again.

It is evident that in this case the action of protamine-insulin was too evenly protracted to be successful in treatment. When the excess carbohydrate in the blood was used up during the day, either by metabolism or by excretion, hypoglycemia occurred during the night while the insulin was still active, and this brought the patient into shock. The patient's pancreatic function was nearly or quite zero. Ingestion of carbohydrate foods was followed by a rapid and great rise in his blood-sugar, and a sufficient quantity of rapidly available insulin was needed at once. It seems quite possible

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that if he had had some residual pancreatic function, the daily or twice-daily injection of protamine-insulin might well have been successful, for the pancreas would have taken care of the sudden changes which occur

the pancreatic function was about zero), and the patient would lose carbohydrate which he needed to sustain life itself, and at the same time render himself liable to shock subsequently.

ESTIMATED FLUCTUATIONS OF BLOOD SUGAR

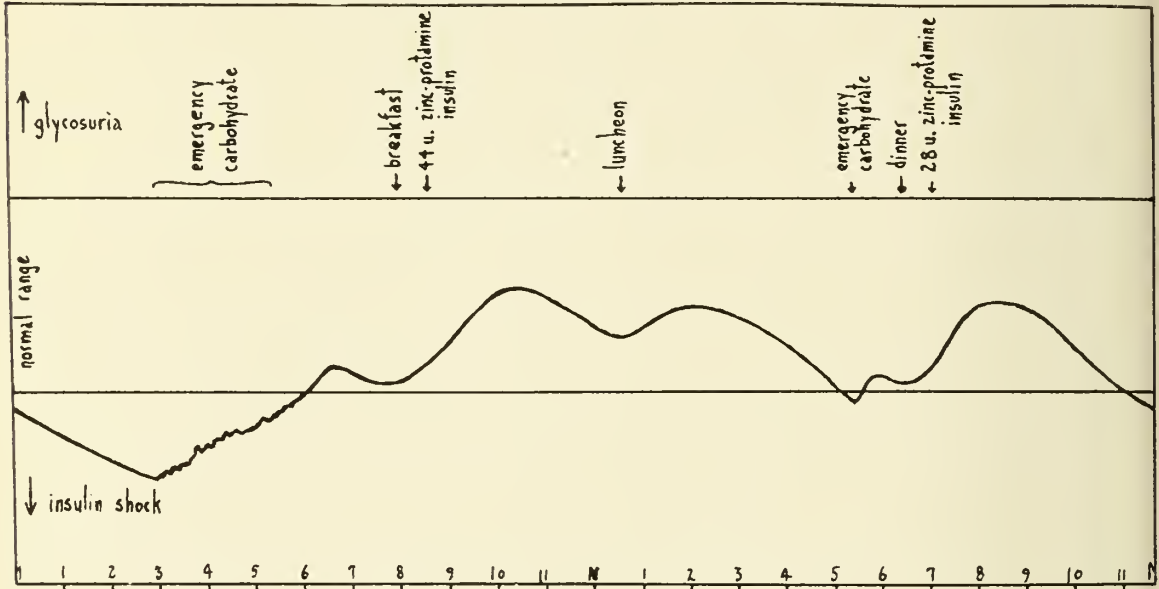


Chart 1.

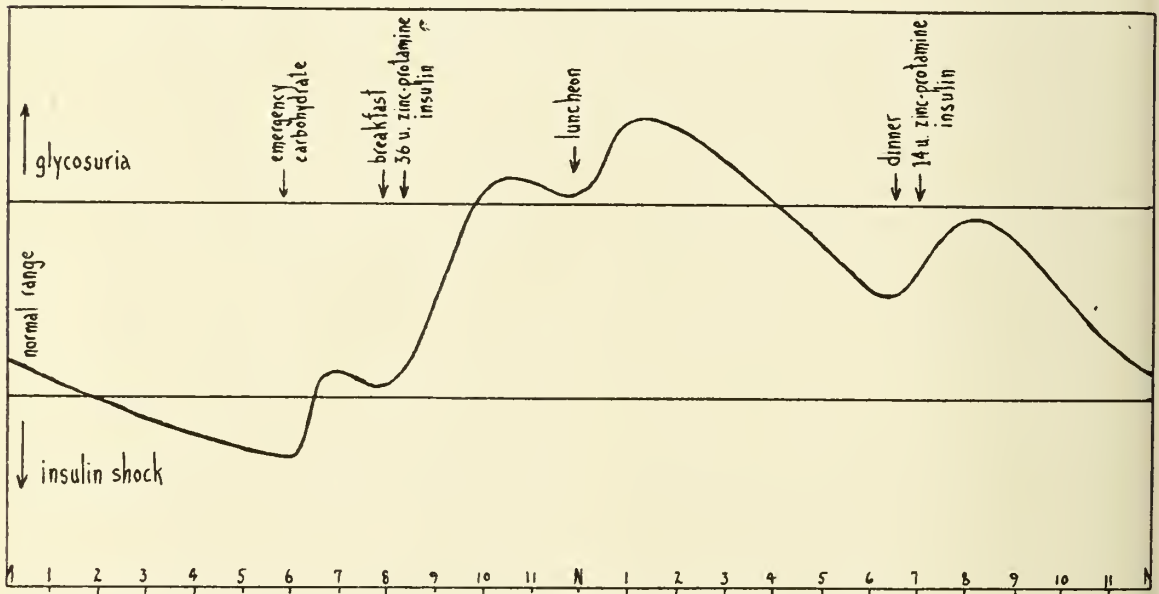


Chart 2.

after eating. In this case, however, so much protamine-insulin was required to take care of the quantities of carbohydrate ingested at meals that the continued slow action of the insulin after the meal period (i.e., day-time) produced hypoglycemia. And if less of the slowly acting insulin were given, the hyperglycemia which occurs after eating would not be offset (since

Campbell, Fletcher, and Kerr have suggested six means of controlling this postprandial hyperglycemia. None of these was successful. Increasing the dose of protamine-insulin only aggravated the early morning shock. Moving back the injection time had no noticeable effect whatever. Reconstituting the diet so that most of the carbohydrate was given at night only pro-

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uced a hyperglycemia after the evening meal without any way altering the early morning shock. The fourth suggestion, like the sixth, involves the use of regular insulin with protamine-insulin, and no advantage could be seen in the use of two remedies to take the place of one. And giving a second dose of protamine-insulin, a few hours after the morning one, while it reduced the hyperglycemia, increased the intensity of the early morning shock.

But the purpose of therapeutics is not merely to enlighten the laboratory scientist with a series of twenty-four hourly specimens of blood each containing 165 milligrams per cent of sugar. It is first of all to make the life of the patient safe, and to keep himself, his family, and his friends as happy as possible. In this case both the patient and his wife lived in continuous apprehension of the early morning insulin shock and the peril of diabetic coma during the early afternoon. The rising at two o'clock in the morning to test the urine and eat brought on a state, particularly in the wife, approaching exhaustion. His friends, too, were deeply concerned over the gravity of his condition and

the absence of success in treating it. Under these conditions the old regime was resumed, for in spite of its shortcomings it had proved better than the new.

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LEIOMYOMA OF THE STOMACH ASSOCIATED WITH MALIGNANT GASTRIC POLYP*

HOWARD R. HARTMAN, M.D. and JOHN D. CAMP, M.D.

Rochester, Minnesota

THE unusual pathologic changes in the tissues of the body which are occasionally encountered are interesting not only because of their rarity, but also because intriguing diagnostic problems are often involved. In such cases accurate diagnosis is vital to the patient's physical and mental health. This is particularly true when the lesion is obviously present as a readily palpable tumor, yet if it is located in the abdomen its nature may be clothed in mystery until it is exposed at the operating table or, in some cases, until part or all of it reaches the pathologist. Roentgenologic studies often clear the way toward the imperative accurate diagnosis. In rare conditions complete preoperative data carefully evaluated may not lead to an accurate diagnosis because the limited past experience does not permit accurate judgment. The present case is reported because of the infrequency with which such lesions occur and the diagnostic problem involved.

The patient, a woman forty years old, first came to the clinic in 1928, only because of an asthmatic bronchitis. Our efforts at that time were confined to that condition, for all her other bodily functions were normal. On the patient's second visit to the clinic, in 1931, she complained of constipation, of headaches of a migrainous nature, and of an uncomfortable feeling in her abdomen which was associated with some bloating, flatulency and belching after the ingestion of fats. There was no history of abdominal pain, soreness, jaun-

dice, or other suggestive symptoms of cholecystic or gastric disease. Elsewhere she had been advised of an existing anacidity, a condition whose presence was confirmed by us. Roentgenologic examination of her abdominal organs was not made at this time. Paroxysmal tachycardia was present, but physical examination gave negative results except for small uterine fibroids which were discovered on bimanual examination.

At the time of this patient's third visit to the clinic, in 1932, she sought an explanation for an enlarging abdomen; she thought that she could feel a small tumor adjacent to the umbilicus. This, however, we could not palpate. She had gained 13 pounds (5.9 kg.) since the time of her last visit. Aside from the fibroid previously noted, physical examination at this time was negative and the routine laboratory findings were normal. No roentgenologic study of the abdominal organs was made.

In 1935, the patient again visited the clinic, at which time she was forty-eight years old. She had reached the menopause in January, 1931. She again complained of an abdominal mass, which she said she could feel and which she said she was conscious of when supine because of the weighty feeling in her abdomen and because of her periumbilical cramps. There were no symptoms to suggest the possible origin or nature of this mass, there was no pain after meals, nausea, vomiting, or gross bleeding from the gastro-intestinal tract. The patient maintained the tumor had grown from the time she had first been able to feel it in 1932. She was an ardent golfer and led an active, robust athletic life. The constipation of which she formerly complained was less troublesome at this time, and only rarely did she have palpitation or cardiac irregularity.

On physical examination the patient appeared to be in radiant health, with good musculature and tanned

*From the Division of Medicine and the Section on Roentgenology, The Mayo Clinic, Rochester, Minnesota.

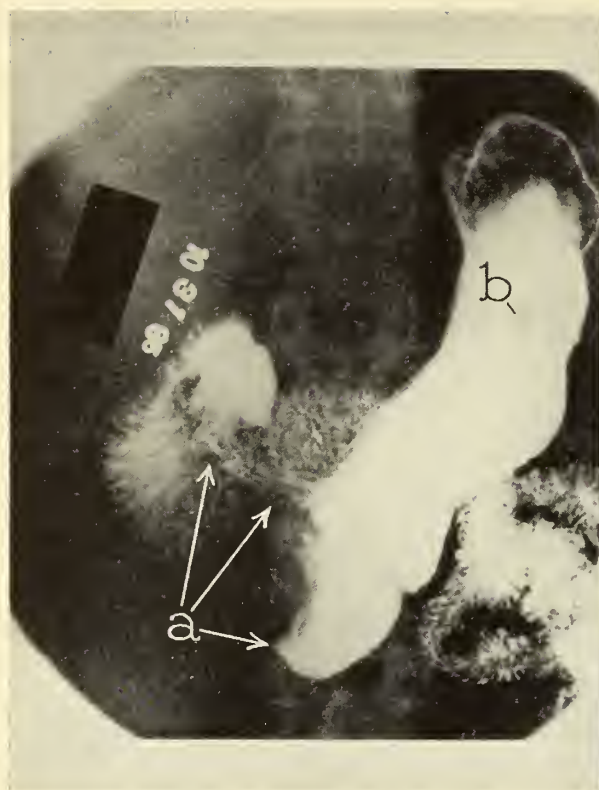


Fig. 1. Roentgenogram of stomach, revealing (a) filling defect produced by larger intramural leiomyoma involving greater curvature; (b) filling defect produced by a small pedunculated gastric polyp which proved to be malignant on histologic examination.



Fig. 2. Gross specimen, showing broad base of pedunculated leiomyoma attached to external surface of stomach. The upper portion of the specimen has been rotated to expose the mucosal surface, to which is attached a pedunculated malignant gastric polyp *p*.

skin. Her weight had remained constant at 128 pounds (58.1 kg.). She was five feet five and a half inches (166 cm.) tall; her blood pressure in millimeters of mercury was 118 systolic and 78 diastolic, and her heart, lungs and pelvis, except for fibroids, were pronounced negative. Palpation of the abdomen at this time revealed a firm tumor, about 10 by 5 cm., and somewhat the shape of a palpable spleen which had rotated 180° on its anteroposterior axis, so that a niche like a distorted splenic niche was near the left costal margin. The mass could be moved with ease to any place in the abdomen, even to the right lower quadrant, without discomfort to the patient, and could actually be turned to some extent on either of its axes.

In the differential diagnosis the following conditions were considered: wandering spleen, enlarged loose kidney, mesenteric tumor, intestinal tumor, and gastric tumor. While the size and position of the tumor hinted that it might be the spleen, the niche was poorly defined and was located on the opposite side of the mass from the usual site of a splenic niche. The value for hemoglobin was 16.4 gm. per 100 c.c. (98 per cent); erythrocytes numbered 4,440,000 and leukocytes 9,200 per cubic millimeter. The differential blood count revealed the following percentages: lymphocytes 34.5, monocytes 2.0, neutrophils 61.5, eosinophils 1.0, and basophils 1.0. Blood smears showed nothing diagnostic. The mass, therefore, could hardly be the spleen. When in its usual position at the left costal arch, to which the mass would settle if left alone, it was not palpable posteriorly by bimanual palpation, as is possible with the kidney, particularly when enlarged. The urine had a specific gravity of 1.029; it was acid in reaction and contained no albumin or sugar, but a few pus cells were present. The blood urea was 28 mg. per 100 c.c.

A roentgenogram of the kidneys showed them to be of normal size and in normal position, but revealed an irregularly shaped soft tissue shadow about 12 cm. in diameter overlying and extending below the left kidney. This definitely excluded, of course, the possibility of renal tumor. Primary mesenteric tumors of this size on the other hand, are usually cystic and globular and do not migrate to the left costal margin. They tend to be midabdominal. The tumor in this case did not conform to these requirements, and so the possibility of mesenteric tumor was also abandoned. A tumor of the colon of this size would have produced some obstructive symptoms, but the patient's constipation had improved. A roentgenogram revealed the colon to be normal and the tumor to be extrinsic to the bowel. No attempt was made to connect the tumor with the small bowel by roentgenologic study, which might have been necessary had not roentgenologic study of the stomach disclosed the true location of the tumor.

Roentgenologic examination of the stomach revealed an irregularly rounded filling defect involving the greater curvature of the lower third of the stomach. The filling defect coincided with the palpable tumor, although it was quite apparent that the tumor was much larger than could be accounted for by the defect in the contour of the stomach. It was impossible to separate the tumor from the stomach and both moved together when the mass was shifted in the abdomen. Pressure of the palpating hand on the lower half of the stomach revealed that the outline of the gastric mucosa was intact, although it was pushed upward at the site of the tumor. This fact made it quite evident that we were dealing either with a tumor that had arisen within the gastric wall and had deformed the gastric mucosa secondarily by pressure, or a tumor that was firmly at-

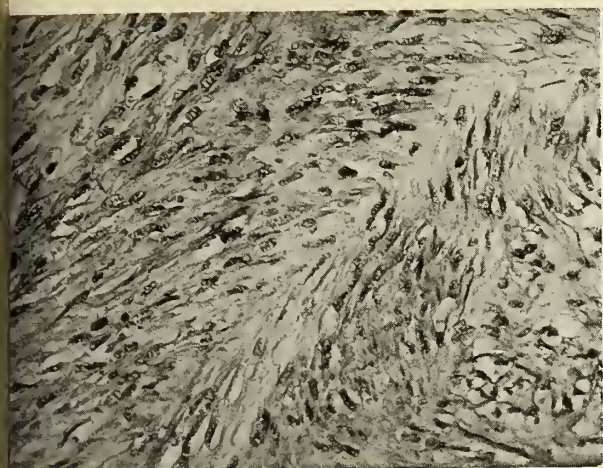


Fig. 3. Leiomyoma of stomach ($\times 255$).



Fig. 4. Malignant polyp of stomach ($\times 175$).

attached to the stomach itself. In addition to this lesion, roentgenoscopy revealed a discrete polypoid lesion of the mucosa, about 1.5 cm. in diameter, on the posterior wall at about the junction of the upper and middle thirds of the stomach. It had the usual appearance of a gastric polyp (Fig. 1).

Exploration through a midline incision revealed a large, pedunculated, and irregularly shaped polypoid tumor, 11 cm. in diameter, attached to the external surface of the stomach near the angle anterior to the gastrocolic omentum. The base of this tumor was 2.5 cm. in diameter. In addition, the stomach contained a polypoid mass, 3 cm. in diameter, which was attached to the mucosa of the posterior wall in the upper midportion of the stomach. Further exploration showed a few small uterine fibroids. The appendix was not visualized. Partial gastrectomy was performed, removing three-fifths of the stomach and reestablishing gastric continuity by means of a posterior Polya type of anastomosis.

Attached to the 15 cm. of stomach which had been removed was a leiomyoma, 11 cm. in diameter, on the serosal side. The mucous membrane was not involved by the growth. There was also a carcinomatous polyp, 3 cm. in diameter, on the mucosal side of the specimen. No adjacent glands were attached to the specimen (Figs. 2, 3 and 4).

Comment

Leiomyoma is the most common tumor of the stomach. This startling statement is clarified, however, by adding that all but a few of such tumors are of microscopic proportions and never grow to the size reported by Zellhoeffer and Rieniets. The finding of a leiomyoma of the stomach of surgical importance, therefore, is rare.

The literature on this subject is quite considerable in English, French and German. Eusterman and Senty, in 1922, reported from The Mayo Clinic twenty-seven benign tumors of the stomach in 2,168 operative and 2,285 nonoperative cases of gastric tumor. Of these twenty-seven benign tumors, ten were myomas, five fibromas, four angiomas, two dermoids, one gastric polyposis, two adenomas, and three polyps. Wells, reporting a case of leiomyoma with fatal termination, quoted Naidu and MacCarty, who reported 1,194 cases of tumor of the stomach in which patients were operated on. Fifteen lesions were benign; five were leiomyomas, three fibro-

mas, two fibromyomas, one adenoleiomyoma. Farr and Glenn listed eighty-four myomas reported from 1896 to 1912 and said they had never heard of a case in which the diagnosis was made preoperatively. That probably holds true today except that, with improved roentgenologic technic, it is generally possible to differentiate a malignant from a benign gastric tumor.

Historical data aid little, if at all. Leiomyomas of surgical importance affect no particular age group. Outland and Clendening reported a hemorrhagic leiomyoma, weighing 341 gm. and measuring 8 by 6 cm., in the case of a nine-year-old boy. According to Hunt most of these tumors occur between the ages of forty and seventy years. Benign tumors are usually asymptomatic, although hemorrhages may occur. In the case reported, this was not true and the mucous membrane was found intact. When properly placed, the tumors may cause obstruction to the gastric outlet. Aside from hemorrhage and obstruction, no symptoms occur with any regularity. The patient in the present case reported that when supine she had a sense of weight in her abdomen and periumbilical cramps, which was indicative of mild obstruction of the small bowel. Nutrition is not interfered with and dyspepsias usually do not occur even if the tumefaction is large. Surgical removal effects cure and is the only treatment of avail.

This report, which was written fifteen months after the operation, finds the patient again able to enjoy her active, athletic robust life.

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EDITORIAL

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BUSINESS MANAGER

J. R. BRUCE

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State Medical Meeting, 1937

THE 84th annual meeting of our State Medical Association is now a matter of history. The meeting this year set a high mark in attendance and interest, the innovation this year being the inclusion in the program of the other professions allied with medicine in the care of the sick. This is the first time in this locality at least that a state medical meeting has included on its program representatives of dentistry, nursing, pharmacy, hospital administration and social welfare service. When we consider that there are only about 150,000 physicians in the country and some million additional individuals who devote their activities to the care of the sick directly or indirectly, it seems highly proper that advantage should have been taken of the recent

medical meeting to consider matters of common interest with these groups.

The meetings of the Congress of Allied Professions were of a distinctly economic nature. One afternoon was devoted to addresses on social service, hospital associations, nursing education, and problems of dentistry and pharmacy with informal discussions by representatives of various groups mentioned. Such meetings should lead to understanding and coöperation among these allied groups in facing important problems which have been intensified by the depression and concerning which so much legislation has been enacted. Interest in these problems was demonstrated by the large number of individuals attending the Congress (see Medical Economics section).

The official registration at the combined meeting was 5,510. Of these 3,140 were physicians. Some fourteen states were represented although the states bordering on Minnesota contributed most of the out-of-state visitors. The program the last day of the convention, devoted to industrial injuries, attracted many and was the occasion of a gathering of the Great Northern Railway surgeons.

Industrial surgery and the care of injuries from automobile accidents involving insurance, have come to play a very large part in surgical practice. In this type of work the *relation* of the patient in his choice of surgeon has been rather disturbed and we take pleasure in publishing in this issue an address on the subject by Mr. Voyta Wrabetz, Chairman of the Industrial Commission of Wisconsin, which contains much valuable advice to the profession. The physician's prime consideration in these cases is still for the patient, although the patient does not foot the bill. The author stresses the necessity for the same psychological treatment of the patient that applies to the so-called private patient, a point which is perhaps too often overlooked.

Some fourteen distinguished guest speakers took part in the program. Unfortunately two expected guests, the Reverend Alphonse M. Schwitalla of St. Louis, and Dr. Morris Fish-

bein of Chicago, were unable to attend. The addresses of the attending guests will appear in MINNESOTA MEDICINE in succeeding issues, and should prove interesting reading to those who were unable to attend the convention.

The evening meeting of the Congress held at the Auditorium was well attended, which showed the interest in economic problems on the part of the allied groups.

The Auditorium was nearly filled for the Public Health meeting, which indicated the general interest on the part of the public in health matters. The coöperation of newspapers and radio stations resulted in widespread publicity which doubtless did much to contribute to the success of this phase of the meeting, an accomplishment which should be a source of pride to each member of the Association and which does credit to the officers and local committees.

The medal offered each year by the Southern Minnesota Medical Association for the best scientific exhibit was awarded this year to Dr. Edward A. Boyden and his associates for his studies on the gallbladder and sphincter of Oddi. Those receiving honorable mention were Dr. L. F. Hawkinson of Brainerd for his endocrine studies, and Dr. Horace Newhart of Minneapolis for his committee's exhibit on deafness prevention and amelioration.

The work of the House of Delegates was handled expeditiously by means of reference committees. It was unfortunate that one meeting prevented delegates from attending scientific sessions. The delegates had the pleasure of hearing Olin West, our national secretary, who made the plea that the medical profession be left free to continue its marvelous progress and not be throttled with any national sickness insurance which would result in inferior medical care to the public. Dr. West mentioned the publicity campaign of the United States Public Service for the control of syphilis. The Council of the State Association has passed a resolution urging coöperation of the profession with federal and state agencies in the war on venereal diseases. It is their recommendation that federal and state aid be given existing agencies where needed rather than for the purpose of establishing new clinics for the diagnosis and treatment of these diseases, any new clinics to be established by local county societies. The delegates also heard

from Dr. E. H. Skinner of Kansas City, about some of the steps taken by the profession in that city to meet social security problems. In Kansas City no free vaccination is done except at the City Hospital and the immunization is done at a set fee of one dollar in the doctors' offices. He called attention to the fact that panel medicine has not proven itself superior in cutting down disease and disability in those countries where it has been tried.

The new constitution of the state medical association was adopted by the House of Delegates and two new officers, speaker and vice-speaker of the House, were added.

The following were elected officers of the Association for 1938: Dr. James M. Hayes, Minneapolis, president; Dr. W. R. McCarthy, Saint Paul, first vice-president; Dr. B. A. Smith, Crosby, second vice-president; Dr. E. A. Meyerding, Saint Paul, secretary; Dr. W. H. Condit, Minneapolis, treasurer; Dr. W. W. Will, Bertha, speaker of the House of Delegates; Dr. J. C. Hultkrans, Saint Paul, vice-speaker of the House of Delegates.

The following Councilors were elected: Dr. B. J. Branton, Willmar, Third District; Dr. G. A. Earl, Saint Paul, Fifth District; Dr. Chester A. Stewart, Minneapolis, Sixth District; Dr. E. J. Simon, Swanville, Seventh District.

Dr. J. T. Christison, Saint Paul, was re-elected delegate to the A. M. A. meeting, with Dr. E. A. Meyerding, Saint Paul, as alternate.

The State meeting next year will be held in Duluth at a date to be set later by the Council.

Coramine

IN SPITE of much reference to stimulants, we have as a matter of fact very few at our disposal. Strychnine has been given from time immemorial only to have almost entirely disappeared in this connection. Camphor is little used in this country, although it is said to be used considerably in European countries. Caffein is much used but has the well known effect of producing sleeplessness and is now known to add to the cardiac depression caused by acetanilid, alcohol and morphine. Ephedrine has been disappointing as a stimulant and if given intravenously is actually dangerous. Digitalis is slow in ac-

tion and its use intravenously and in pneumonia is certainly open to question.

Most of the literature regarding pyridine beta carbonic acid diethylamide, more generally known as coramine, has appeared in foreign countries. A number of articles, however, have been published in recent years in this country which indicate that coramine is a valuable synthetic drug not only because of its action in stimulating respiration, but because of its circulatory action. Its stimulation of the central nervous, more especially the respiratory center, has been well proven. Recently it has been shown that it increases ventricular contraction, rate of blood flow generally and in the coronary vessels particularly, and in some cases at least elevation of blood pressure. Electrocardiographic studies following its administration show an increased electrical voltage in the ventricular complex without depression of the atrioventricular conductivity.

Coramine is of particular value in overcoming the depression caused by such drugs as the barbiturates, anesthetics, alcohol and morphine. One author reports its routine use following avertin anesthesia and in a few instances a life saver when given intravenously with simultaneous intramuscular injections in such cases. Another author gives it in twenty minim doses orally every four hours as soon as the diagnosis of pneumonia is made, and finds it assists respiration and prevents cyanosis. When the patient is seen late and cyanosis is already marked, one to three cubic centimeters of coramine given intramuscularly often causes the cyanosis to disappear. Its circulatory action has also proved of benefit in myocardial and valvular heart disease associated with decompensation.

The reports from the clinical use of coramine are most convincing. It can be used orally in twenty minim doses of the 25 per cent solution as often as every four hours for an indefinite period or subcutaneously or intramuscularly in two to five cubic centimeter doses or even intravenously in similar dosage. Its synergistic action with digitalis and strophanthus should be allowed for. The wide latitude between its therapeutic and toxic dosage renders coramine a particularly safe drug.

Painting the Orange

Today the orange is universally recognized as a rich source of vitamin C and therefore a desirable fruit for children. The natural color and other characteristics of the rind vary with different varieties and with the season. Once these features served to some extent as marks of identification. This is not true today, when there is a current tendency to "improve on nature." Several years ago the practice of exposing oranges to ethylene gas for from two to four days was introduced. The ethylene causes a blanching of the green color and a consequent unmasking of the yellow pigments also present in the skin. The United States Department of Agriculture has ruled that this process does not itself constitute adulteration. More recently a rapid method of coloring has been employed. The fruit is dipped in a solution of a harmless coal tar dye, which gives to the resulting "painted oranges" a more uniform, brilliant color. Food laws require that the presence of dyes must be declared by having the phrase "color added" stamped on each orange. The state of Florida has recently provided rigid regulation of the packaging and marketing of citrus fruit according to more exacting standards than those required by the federal government. The United States Department of Agriculture accordingly has agreed to wait until September, 1937, before action will be taken on fruit shipped in interstate commerce. The Florida regulations in large measure should serve to remove the necessity for federal action. Accurate information concerning the effect of the artificial coloring of oranges on the consumption of the fruit is not available. Consumers have questioned whether the colored oranges are of high quality. Some consumers have expressed the opinion that colored oranges do not keep as well as the untreated russet colored fruit. Others have asked whether the "painted" rind is suitable for making marmalade and candied orange peel. The promulgators of the coloring of oranges should arrange to answer these questions by scientific evidence. (J. A. M. A., Dec. 26, 1936, p. 2136).

Mercurial Diuretics

Sollmann and Schreiber studied in a routine manner the excretion of mercury in clinical treatment and recorded the urinary volume. The different preparations were given by intravenous or intramuscular injections. They were classified into four groups: the organic compounds, including mercurosal, merbaphen and salyrgan; the inorganic ionizable compounds, including mercuric bromide, mercury bichloride in oil and mercuric oxycyanide; the inorganic colloidal compounds, consisting of metallic mercury and mercuric sulfide; and the unclassified compounds flumerin and mercuric salicylate in oil suspension. The organic compounds caused somewhat greater diuresis in therapeutic doses, but with regard to the mercury content and especially the amount of mercury excreted the organic compounds were surpassed both by ionizable inorganic and by colloidal compounds. Furthermore, the organic compounds gave somewhat more prolonged periods of diuresis and excretion of mercury than the inorganic compounds injected both by vein and by muscle. The colloidal compounds caused the shortest period of diuresis when injected by vein and the longest period of excretion of mercury when injected intramuscularly. They caused the longest period of diuresis and the shortest period of excretion of mercury. In general, the differences between the compounds of each group were minor and do not suggest a significant generalization. (J. A. M. A., Feb. 27, 1937, p. 730.)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

Approved by the Delegates

A brief résumé of the entire proceedings of the House of Delegates and Council at their recent Saint Paul sessions will be published in an early issue of MINNESOTA MEDICINE.

In the meantime, here are some of the more important actions taken by both bodies at the Saint Paul session. They concern affairs of public moment and all members should be aware of their purpose and content.

Resolution on Syphilis

A resolution on syphilis which is a modification of the report offered to the House by the new Committee on Syphilis and Social Diseases was passed by the Delegates and now constitutes the official policy of the state association on the campaign for syphilis control in Minnesota. Here it is, complete.

"It is the consensus of opinion of the Council of the Minnesota State Medical Association that the medical profession of the State of Minnesota shall cooperate with the United States Public Health Service, the Minnesota State Board of Health and the various local and municipal boards of health in the national and state programs for the control of venereal diseases.

"It is recommended that uniform standards of examination and treatment be established on a state-wide basis under the direction of the Committee on Syphilis and Social Diseases of the Minnesota State Medical Association in cooperation with the United States Public Health Service, the Minnesota State Board of Health and various local and municipal boards of health.

"It is also suggested that adequate surveys be made of the existing facilities and that supplementary aid from the Federal Government or the State of Minnesota and other governmental divisions be contributed to existing agencies rather than for the purpose of establishing new clinics and health centers for the diagnosis and treatment of venereal diseases.

"It is further suggested that local county medical societies shall be responsible, in the development of new clinics and health centers, for the diagnosis and treatment of venereal diseases when inadequate facilities

President's Letter

THE State Meeting gave us all an opportunity to refresh our knowledge on scientific subjects as well as to observe the newer methods employed in laboratory procedure. It should serve as a stimulus to encourage us to read more thoroughly our medical journals and to attend as many medical meetings as possible. None of us remains stationary. We either grow with scientific medicine or retrogress and fall by the wayside. It is hoped that all of you will take an active part this coming year in your county organizations and not leave the responsibility of committee activities to the other fellow.

The development of welfare boards will require thoughtful consideration. Thus, it is believed that local problems of health are solved better if the physicians of a community work through their county organizations rather than as individuals. It is our duty to advise commissioners concerning the care of the sick. We know their needs and desires. Therefore, let us see that they shall continue to have the privilege of free choice of physician.

A. W. ADSON, M.D.

ties exist. The members of the county medical society in a given county may designate licensed practitioners of medicine to conduct examinations and administer treatment in the control of venereal diseases of those persons financially unable to provide the same. From available funds, such physicians conducting such examinations and administering such treatment shall be paid a reasonable fee for their professional services."

New Constitution

The new constitution and by-laws substantially as printed in earlier issues of MINNESOTA MEDICINE, had their final hearing and are now the official guide and law of the state association. Copies in their final form will be available shortly through the state association offices.

Funds For Public Health Education

An extra \$1,000 was added by the Council to the budget of the Committee on Public Health Education in order to permit the committee to assume a proper leadership in the manifold health education campaigns now being carried on by lay or by state and federal public health agencies. This money was formerly in the budget of the public health education committee but was removed last year to permit of expansions in other directions in association work. The vital importance of state association participation in these new movements prompted the Council to restore the budget this year.

Minnesota's Cancer Program

An executive committee which will be in control of all expenditures of funds raised in Minnesota for the cancer education program of the Women's Field Army of the American Society for the Control of Cancer was appointed, with the approval of the Council, by the Committee on Cancer of which Dr. Martin Nordland is chairman. This latter committee last winter assumed the position of executive advisory committee of the Women's Field Army.

The new committee was appointed at a meeting of the Council with Dr. Nordland, Mrs. Harlow Hanson, Minneapolis, Commander of the Women's Army, Dr. F. L. Rector, Field Secretary of the American Society for the Control of Cancer, and Dr. William A. O'Brien, University of Minnesota, state chairman of the cancer society.

The following persons were appointed: Dr. Nordland, chairman; Mrs. Hanson, co-chairman; Dr. J. M. Hayes, Minneapolis, president-elect of the state medical association; Dr. E. A. Meyerding, St. Paul, secretary of the medical association; Dr. O'Brien, Mr. Louis W. Hill, Jr., treasurer for the Women's Field Army, and Dr. L. R. Critchfield, St. Paul, chairman of the Committee on Public Health Education.

The medical society officials will serve jointly with the cancer society and Women's Field Army officials to control every detail of the campaign and to guide it along useful paths in Minnesota.

Privileged Relations

Attention of all physicians was specifically directed by the Council to be brought once more to the special character of the physician-patient

relationship. This relationship is privileged and doctors of medicine, in their dealings with insurance companies in particular, SHOULD NOT FORGET THEIR CODE OF ETHICS.

Summer Round-up

A definite endorsement of the objectives of the Summer Round-up of the Parent-Teacher Association was presented and approved by the House of Delegates.

The text of the endorsement, which follows closely the endorsement passed by the House of Delegates of the American Medical Association is printed below. Members are urged to familiarize themselves with it as an aid in making local arrangements for Summer Round-up campaigns in their communities.

"WHEREAS, The American Medical Association co-operates with the National Congress in this program in these ways:

"1. By order of the Board of Trustees the director of the Bureau of Health and Public Instruction, acts as a member of medical advisory board which approves of the physical examination blanks, instructions for leaders and leaflets for parents.

"2. By donating the medical record forms for the program.

"THEREFORE BE IT RESOLVED, That the Minnesota State Medical Association follow the lead of the American Medical Association in approving the purpose of the Summer Round-Up and offering its cordial coöperation to the Minnesota Parent-Teacher Association in promoting the program and in working out proper methods of procedure."

Sex Crime

The problem presented to the doctor by the general public sentiment for reporting potential sex criminals will be studied by the Medical Legal Committee as a result of the following resolution passed by the House:

"RESOLVED, That a Committee should be appointed to the House of Delegates of the Minnesota State Medical Association to study the whole matter of reporting potential sex criminals and looking to the possibility of recommending a change in the Minnesota statute and unwritten law on privileged communications to permit physicians to coöperate more fully with the police in the suppression of sex crimes."

Herman M. Johnson Fund

A resolution making definite and permanent for all time the objective and management of the Herman M. Johnson Memorial Fund was in

roduced into the Council and passed by the House of Delegates. The fund has now approached within \$200 of its goal of \$2,000. The first lectureship, tentatively scheduled at the time of the annual meeting, was postponed because of inability of the speaker, the Honorable Theodore Christianson, first lecturer, to be present.

This is the resolution:

"WHEREAS, Almighty God did remove from our midst on the 18th day of June, 1935, one of the outstanding members of the medical profession of the state of Minnesota, Dr. Herman M. Johnson of Dawson, whose work and achievements are known to all of us in the present generation, and

"WHEREAS, It is the wish of many members of the medical profession of this state to perpetuate Doctor Johnson's memory so that those who will practice medicine in years to come in the state of Minnesota will be able to understand, appreciate and continue the work that has been done to raise the standards of medicine and to reduce quackery to a minimum, thereby adding to the health and welfare of the people of this state, and

"WHEREAS, Contributions have been made by friends of Doctor Johnson throughout the state of Minnesota, to effectuate this purpose; now

"THEREFORE, BE IT RESOLVED by the Minnesota State Medical Association, through the House of Delegates, that the money so contributed in the past, and to be contributed in the future, be and the same hereby is set apart irrevocably, for all time, in a trust fund, the principal thereof to forever remain intact and interest therefrom to be reinvested in the fund or to be used to establish and maintain a suitable memorial as the Council of the Minnesota State Medical Association shall direct. The aforesaid moneys to be invested and the interest therefrom to be expended by order of the Council of the Minnesota State Medical Association."

Professional Conference

If the Committee that arranged the Congress of Allied Professions had any advance misgivings about the attractions offered by their conferences, the large numbers who attended the Lowry and Auditorium sessions Monday, May 13, must have banished their doubts.

Professional men and women of Minnesota are eager to consult with physicians about their joint professional problems and apparently they are disposed to subscribe to the cardinal policies and principles of Organized Medicine.

It remains only for the physicians, as the logical leaders, to keep in close and friendly contact with them, pay careful attention to the

special problems of each, in order to weld the whole into an influential working body of opinion that may be relied upon to safeguard the essentials of independent professional practice in America.

There was small disagreement in essentials between representatives who spoke at either session.

Agreed On Essentials

All agreed that quality was more important in the long run than quantity in the delivery of professional services; that reservation of freedom of choice to the patient is an important safeguard of quality as well as an important aid to successful treatment.

The panel which followed the first afternoon session developed a slight difference of opinion between certain representatives of the nurses and the hospital executives on the score of the shortage of nurses for elementary bedside care.

It is clear that the problem of standards for nursing education and the inevitable sequelæ of advancement of those standards beyond the point at which the average person is able to pay the fee for nursing care, requires the sensible and sympathetic consideration of everybody involved,—nurses, physicians, hospital executives. In this consideration, they must keep a double objective in mind: first, the maintenance of high standards and a decent wage for the nursing service; second, the provision of a nursing service that will be adequate and available for the needs of everybody, including persons of limited means.

It was agreed on all hands that the physician is the only one out of all who are concerned in care of the sick who may determine the kind and amount of treatment needed by the patient; that the social welfare worker is the one who is best equipped to get information about those who may be entitled to free medical care.

Sickness Insurance Not Recommended

It is clear that group hospital insurance interests all who are concerned in the care of the sick and particularly those who, formerly, were inclined to fasten their hopes upon a general sickness insurance after the European pattern. It is encouraging to note that the inadequacies

and abuses in the European systems have become so flagrant and well known that thoughtful social economists of whatever background are now loath and hesitant about recommending it in Simon-pure form, at least, for America.

Below are some interesting paragraphs selected at random from the talks made by Congress speakers. They indicate quite clearly the current trends of thought among our professional colleagues.

R. Rufus Rorem, Ph.D., Chicago, Director Committee on Hospital Service, American Hospital Association, and Chairman Committee on Accounting and Statistics, National Conference of Social Work:

"Americans need to be educated to the value of good health services. Nearly a half billion dollars is wasted annually on medicines of doubtful value and the services of non-medical healers.

* * *

"No one can possibly be more interested in the quality of health services than the layman who receives them. The medical practitioner has a scientific and professional desire to render good health service. The patient exhibits a personal and emotional demand for the best possible quality. Good health service costs money and the patient or the community should not expect to receive it for nothing. Much poor quality has been the result of the public's ignorance of what constitutes good health service and the consequent unwillingness to meet the costs of such services.

* * *

"No method of paying for medical care should lower the quality of health service received by the people who receive it. Matters of cost or convenience are less important than quality of care. If the American people wish to preserve their community and health they should be prepared to support the practitioners and institutions to a degree and in a manner which will encourage and facilitate high standards of service. What does it profit a man if he save his money and risk his health?

* * *

"Health service is a very technical field of activity. Most phases are, and should be, beyond the capacity of the layman to understand or undertake. But the layman is a specialist in two aspects—in fact he has a monopoly on them. First, he specializes in receiving the health services which are provided. Second, he specializes in the payment of medical bills. The first factor makes the layman intensely interested in quality even though he is very often not a good judge. The second factor makes him interested in the matter of total cost and in the method of payment.

* * *

"Hospital bills are peculiarly adaptable to the insurance method of payment. They are relatively large

and infrequent; they are attended by physicians' fees and involve absence from gainful employment. The growth of voluntary hospital care insurance in America is a sharp contrast to the development of health service in Europe. Except in England, most hospital care is provided by taxation in the various European countries. The health insurance systems of continental Europe pay the hospitals only a fraction of the costs of care received by the insured workers, the balance being met by the local governments, which own and operate most of the hospitals. The English health insurance plan excludes hospital care entirely. The voluntary hospitals rely mainly upon philanthropy—a classification which they attempt to ascribe to the numerous contributory schemes by which the lowest paid workmen are allowed to contribute to the support of the institution in exchange for free care.

"The general hospital as an independent community influence is distinctly an Anglo-Saxon phenomenon. In England the philanthropists support the hospital through gifts. In America the general public support them through private fees. The development of hospital insurance under the guidance of the institutions themselves will prolong their private character and delay their being taken over by the impersonal public—namely the governments."

* * *

Miss Helen Beckley, Chicago, Director of Social Service, Cook County Hospital:

Direct relief in our community is based upon the philosophy of minimum standards consistent with reasonable living but provides little or no positive health program within the actual relief set-up. Lack of funds at intervals of legislative action frequently makes even this minimum drop below safety . . .

* * *

"If health services are to be made adequate and available, then some means must be devised by which practice can catch up with our knowledge. The present lag appears to be largely due to lack of funds to pay for service.

"Federal grants for health programs, the extension of public health services into the field of treatment, and the integration of health with welfare and educational divisions are all trends in the changing public policies. To safeguard the practices and policies which through generations have proved sound and adapt them to this changing philosophy is a difficult program for the present generation.

* * *

"Surely as public education demands increasing health measures, standards of personnel and practice must be so protected as to make available the highest qualified talent. This means, in my judgment, consistent and never ending educational propaganda and vigilance in maintaining and sustaining civil service standards and in keeping public opinion so informed that there will be demanded the best professional personnel and practice which the many allied professions have slowly developed for themselves."

Miss Daisy Dean Urch, R.N., Winona, President, Minnesota State League of Nursing Education:

"As many of you know, an eight year study by the Grading Committee of the Rockefeller Foundation made it clear that there is a dearth of nurses prepared for certain fields of nursing in the midst of many unemployed nurses. This condition has persisted throughout the depression.

" . . . To meet the needs, we are developing long-range, broad-gauge programs in coöperation with other health-minded organizations such as the American Medical Association. One of these programs is that to the Committee on Community Health Service, which advocates community organizations that will assume the responsibility of meeting their own health needs and make plans to provide it. As a result, central bureaus, adequately financed, which employ nurses on a salary and which provide service to all patients in the amounts and at the times and places required are in operation in many places now. These bureaus are not charity supported or state services. They are financed by the people directly . . . Of course no professional group or groups can go faster in supplying any community need than the people in that community want them to go. The public carries the responsibility for its own health program. But they also have the right to know what can be done. We are obligated to take the leadership in showing the way . . .

"With our present facilities we cannot provide enough of the type of nurses needed in already planned programs. Our two weaknesses lie in (1) our system of selecting and educating nurses and (2) in conditions of employment of the greatest proportion of graduate nurses. These two problems are inseparable.

"One of our pressing problems is how to provide more nursing schools that are under a 'controlling body whose primary function' is conceived to be education of the students in the school. More endowed and state supported schools are urgently indicated."

* * *

Dean Charles H. Rogers, College of Pharmacy University of Minnesota:

"The practitioners of each individual health profession have been too much concerned with the problems confronting their own profession to think about the troubles of their sister professions. They forget momentarily that the ideal health service to the patient involves a perfect coördination of all health groups in whose functioning no particular member is paramount to or independent of the others. Had there been some coördinating agency such as a council or planning committee of the allied health sciences, composed of men who could see the forest without their view being obstructed by the trees, the adaptation of our services to conditions would have been greatly facilitated and the individual rights and privileges of practitioners in all fields would have been protected."

Dr. W. A. O'Brien, Associate Professor of Pathology and Preventive Medicine, University of Minnesota:

"If the past has taught us anything, it is that any long range planning for the future must provide adequately for preventive medicine. The real results of our joint efforts to improve the health and well-being of the American people are going to come in the future through the prevention instead of the cure of disease."

* * *

Dr. Martha Eliot, Washington, D. C., assistant chief of the Children's Bureau, U. S. Department of Labor:

"Mothers and children of America still have but a fraction of the medical care they ought to have.

"While the drop in infant mortality during the first year of life has been striking during the past decade, the drop does not mean so much if the figures are scanned closely. In 1935 there were 73,000 children under one month old who died, 57,000 under a week old and 78,000 stillbirths.

"Maternal mortality was 62 for each 10,000 mothers in 1915. In 1935 the rate was 58 for each 10,000. Sooner or later the government must increase its funds for maternal and child welfare under the Social Security Act."

* * *

Dr. Maxwell J. Lick, Erie, Pa., President of the Pennsylvania Medical Society:

"We believe that whatever is just and right for the individual is just and right for the group. It is our habit and custom to render services to the individual at reduced fees when circumstances indicate it to be fair and right. If this principle is equitable then it should be applied under similar needs and conditions to the group. To this end, and with the approval of our parent organizations, certain plans for voluntary hospital insurance are being tried. This seems to me to be just and proper, for out of it may evolve a workable, suitable plan, free from political or other extraneous influences, which will meet the major expense of hospital-confining sickness for those least able to afford it . . .

"We certainly affirm our desire to institute any changes made necessary in view of different economic conditions. We want those innovations, however, to come gradually, to be built solidly by trial and error. Science grows thus. An observation, a fact, a theorem, finally a proof. So with us. Let changes come by accretion. Let there be no radical stampede resulting in disappointment, retrogression and frustrated hopes. This is my answer to those of our profession who clamor for a definite militant program of our own. It would take divine wisdom to foresee the future, but it requires only common sense to keep constantly before ourselves, before the public and before our legislators, the necessity for maintaining unsullied all that is noble and worthy in the art of medicine."

"The Day of Exclusion is Past"

Dr. Nathan B. Van Etten

The economic and social problems of medicine were discussed also at a general assembly for physicians, Tuesday, with Doctor Lick and Dr. Nathan B. Van Etten of New York City, distinguished speaker of the American Medical Association's House of Delegates and nationally accepted spokesman for Organized Medicine, as guest speakers. Dr. Morris Fishbein scheduled for this symposium was prevented by illness from attending the meetings and his place was taken by President A. W. Adson of Rochester.

Dr. Van Etten signed the Minority Report of the Committee on Costs of Medical Care in 1932, explained the position of his minority and of Organized Medicine in general, later, in a number of popular publications. His concluding remarks at this session for doctors are given here because they provide some excellent practical advice for physicians from an authoritative leader of medicine in the United States.

Dr. Van Etten:

"The day of exclusion and seclusion is past. Generous coöperation with all physicians and with social agencies must be developed. Hospital zones must be planned and all competent physicians living within the zones must be permitted the use of the hospitals' facilities. Individualism has been sneered at by welfare groups which are struggling for warm places in snug bureaus, but after all is said, and after studying all of the European service plans which employ more lay managers than physicians, which pay clerks more than doctors, we must pay tribute to the best traditions which we have in this country which are based upon the individual care of the sick by the individual physician.

"An American physician represents one of the most highly educated groups of the community but he rarely functions as a citizen. Less than thirty per cent of the physicians of this great democracy take the trouble to register as voters. How can the medical profession expect consideration from those who make our laws while the physician stands aloof from the actual exercise of citizenship? It seems more important than at any time in our history that physicians should take positions of leadership in all public activities, thereby indicating their willingness to coöperate to the limit of their abilities in the promotion of projects which seem to have community value. In order to be effective, physicians must have more than superficial knowledge of the machinery of government, they must educate themselves to function as citizens in the best sense of whatever citizenship means or implies. Someone has said recently that many people pass uncon-

ciously from adolescence to obsolescence. Unless American physicians can be aroused from their civic adolescence, a similar judgment will be their inheritance. Old men will not easily change from inertia to activity, but young physicians who are realizing the realities of life as never before will adjust themselves to new social conditions, and their experience will stimulate all of us to study the entirely new problems which confront the medical citizen."

The Golden Rule

(Monthly Editorial Prepared by the Medico-Legal Advisory Committee)

That the outcome of many compensation and insurance cases in court is wholly dependent on medical proof, and that medicine is a science wherein divided expert opinion is not uncommon, are truths which cannot be disputed.

In order to carry out the usual procedure of a case involving medical treatment, therefore, medical witnesses must be called both for the plaintiff and the defendant. These medical witnesses should never forget that their testimony is given to instruct and inform, not to confuse the court and jury with regard to the vital medical points in issue.

When two men of equal prominence in the community are arrayed on either side, their opinions at variance, how is it possible for lay jurors—unless the medical testimony is disregarded—to bring in a verdict in accordance with the facts in the case?

Ask any member of the Bar Association what he thinks of the medical man on the witness stand and he will tell you that the average jury decides the case with almost complete disregard of the medical opinion expressed because they do not rely on the experts on either side.

Does not an untruthful, exaggerating physician on the stand break down the confidence of courts in medical testimony? Does he not thus commit a serious crime against society? Likewise if he minimizes unnecessarily, is he less at fault?

Expert against expert, testimony sold to the highest bidder, contingent fees depending on the size of verdicts obtained, make of medical testimony a sham and mockery.

Do these happenings build up confidence in medical practice or are we playing into the hands of quacks and charlatans?

And when the malpractice case is brought before the same judges and juries, have we a

right to ask justice of those whom we have misled by our type of testimony? Your Medical Advisory Committee believes the Golden Rule works both ways.

Are We To Serve As "Guinea Pigs?"

No less than eight new bills have been introduced into the Wisconsin Legislature this year all of which propose some change in the practice of medicine in Wisconsin and only one of which meets the approval of the State Medical Society.

A special meeting of the House of Delegates of the Society was recently called to analyze the bills and formulate principles upon which to base the active policy of the society with regard to them.

They range from a bill to establish an interim commission for study of costs of medical care to bills for encouraging establishment of coöperatives and "third party associations," organized for the purpose of providing medical care, also group hospitalization insurance plans; statewide medical-dental-hospital service to the indigent; permission to counties to erect their own hospitals, to employ medical staffs to treat all county residents, to employ tax-supported physicians to care for all residents of the community; and finally, *compulsory sickness insurance for all employed persons earning \$60 a week or less*. In addition there is a bill to create a consumers' bureau for protection of the public against harmful, misleading or fraudulent advertising of foods, drugs, cosmetics and therapeutic devices. This last bill has the support of the medical society provided a few clarifying amendments are included.

Minnesota Next

Minnesota's interest in these bills, called in Wisconsin the Beimiller bills because they were introduced by Assemblyman Andrew J. Beimiller, may be more than neighborly and theoretical if a news story which appeared May 6 in the *Milwaukee Journal* has any foundation in fact.

Here are the concluding paragraphs of the story, which was devoted, otherwise, to a detailed outline of the Beimiller bills:

"This same group of bills, so it is reported, is to be introduced in the *Minnesota legislature when it convenes in special session late this month*. (The italics are ours.)

"In other words, if possible, Wisconsin and Minnesota are to be made the 'guinea pigs' of rich foundations which have money to spend for the promotion of socialized medicine."

Minnesota has been singularly free from legislative attempts of this sort. That does not mean, of course, that we, like Wisconsin, may not be obliged to come to grips with such a situation at any time. There is no reason to believe, however, that any such extravagant adventures in radicalism will get a serious hearing. It is to be hoped that a close coöperation with official agencies in the programs for public health now launched in the state, a helpful and conscientious profession coupled with an alert committee on public policy will serve to prevent any headlong and ill-considered experimentation with medical care in Minnesota.

Not Licensed in Minnesota

The letter quoted below came to state headquarters from Mr. Frank Yetka, Commissioner of Insurance of the State of Minnesota, with the request that it be brought to the attention of every member of the Minnesota State Medical Association:

"The Postal Indemnity Company of Dallas, Texas," says the letter, "is circularizing many of the physicians and surgeons of this state and soliciting them for health and accident policies.

"This company is not licensed by the Insurance Division of the Department of Commerce of Minnesota to engage in the business of insurance in the State of Minnesota. We therefore have no definite information in our files. The only information we have concerning them is contained in a private publication which states that as of December 31st, 1935, the company showed total admitted assets of \$29,661. Total cash income for that year was \$87,716. They paid claims totalling \$28,473.00 and paid out in expenses, salaries, etc., \$49,261.00. In the event of any dispute or difficulty with them between the insured and the company, this Department could be of no assistance in the matter. Should the insured desire to sue the company, he would not be able to get service in the State of Minnesota on the company. It would more than likely be necessary for him to go to the State of Texas to commence action. The company pays no taxes to the State of Minnesota.

"In view of the foregoing, this Department most

heartily recommends that citizens of the State of Minnesota do not purchase insurance in companies not licensed by this Department. May we solicit the aid of your good office in an attempt to get this information to the physicians and surgeons in the State?"

Minnesota State Board of Medical Examiners

Minneapolis Woman Pleads Guilty to Abortion

*Re: State of Minnesota vs. Jeanne Martin,
Alias Esther G. (Marcoe) Talbot.*

Jeanne Martin, alias G. (Marcoe) Talbot, thirty-two years of age, entered a plea of guilty on March 5, 1937, in the District Court of Hennepin County, to an indictment charging her with the crime of abortion. The defendant was indicted by the grand jury of Hennepin County, on February 26, 1937, charged with performing an abortion on a young married woman. On April 1, 1937, following an investigation by the Probation Officer of Hennepin County, the defendant was sentenced to a term of not to exceed four years in the Women's Reformatory at Shakopee, Minnesota, and was placed on probation for four years in charge of the Probation Officer.

The evidence obtained by the Minneapolis Police Department, and particularly the Women's Bureau, indicated that the defendant had been engaged in this unlawful work for a period of approximately two years, and that she had performed in excess of seventy-five criminal abortions. The defendant was paid \$30.00 for performing this criminal abortion. The evidence also indicated that the defendant had collected approximately \$1,500.00 for this unlawful work. She resided at 212 E. 15 Street, Minneapolis, where the abortions were performed. The defendant stated that she had never studied medicine, nursing, nor had she received any training whatever in the field of healing. The defendant advanced as a reason why she should be placed on probation, the present state of her health. She claims to have been operated upon for the removal of her appendix, gall bladder, pelvic tumor, abdominal hernia and bowel obstruction. Prior to being sentenced she was examined by Dr. James E. O'Donnell, 1020 Donaldson Bldg., Minneapolis, and Dr. Thomas Warham, physician for Hennepin County. Both of these physicians advised against incarcerating the defendant because of the defendant's physical condition. The evidence showed, however, that prior to the time of her arrest, the defendant had taken little, if any, steps to improve her health.

The defendant stated that her true name is Esther G. Talbot and that her maiden name was Esther G. Marcoe. She stated that she was born at Bellevue, Nebraska, and that she was raised in Omaha, Nebraska, and Sioux City, Iowa. She was married in 1931, to James Edward Talbot. For some reason or other they have been living in Minneapolis under the name of Martin.

The State Board of Medical Examiners believes that the increasing number of criminal abortions performed in Minneapolis, would indicate that more strenuous measures will have to be taken to eradicate a situation that jeopardizes the life of every person upon whom one is performed. The Medical Board commends highly the splendid work done by the Women's Bureau of the Minneapolis Police Department.

Two "Indian Doctors" Arrested in Houston County

*Re: State of Minnesota vs. John Stanley, also known
as William Stanley.*

*Re: State of Minnesota vs. Billy Stanley, also known
as Billie Stanley.*

On May 15, 1937, Sheriff Arthur Brown, and his deputies George Kelly and Arthur Murray, arrested two "Indian Doctors" in Crooked Creek Township, Houston County, Minnesota. The defendants had gone to the farm home of one Gerhard Welsh, representing that they could cure him of his so-called rheumatic condition with the roots and herbs that they had with them. While they were at the Welsh farm neighbors notified the Sheriff's office and they were immediately arrested. On May 16, 1937, they pleaded guilty before Jerry Kenny, Justice of the Peace, to selling herbs and drugs, the same having no medicinal or curative value. The defendant, Billy Stanley, who claims that she is the wife of John Stanley's father, was fined the sum of \$40.00 and costs of \$20.00, which was paid. John Stanley was put on probation to the Sheriff and both defendants, together with the husband of Billy Stanley, were given twenty-four hours by the Court to leave the State of Minnesota permanently. The two defendants represented themselves as being twenty-two years of age and claimed to be of Osage and Cherokee ancestry. They claimed to have been in the State of Minnesota less than thirty days and to have been living near Canton, Minnesota. They were driving a 1937 Buick Sedan with Minnesota License Number B 571-914. They stated that the automobile was purchased at San Antonio, Texas.

Sheriff Brown and his deputies, Mr. Kelly and Mr. Murray, are to be commended for their prompt action in the apprehension of these defendants. Mr. L. L. Roerkohl, County Attorney of Houston County, also cooperated in every manner in the handling of this case.

OF GENERAL INTEREST

A new office and laboratory are being constructed for Dr. Charles Vandersluis of Bemidji.

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Dr. and Mrs. Roy E. Swanson have been vacationing in the east and in Bermuda.

* * *

Dr. Paul B. Monroe was elected president of the Two Harbors Rotary Club at their annual meeting.

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Dr. F. R. Huxley of Faribault recently spent a month in Mexico.

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Dr. W. D. Beadie of Cannon Falls conducted a chest clinic in South Saint Paul on May 19.

* * *

Dr. Frank D. Smith of Kasson has opened an office for the practice of medicine in Rochester.

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The home of Dr. W. C. Carroll at Lake Josephine was damaged by fire on May 13, which caused damage amounting to about \$1,500.

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Dr. Charles F. Stroebel, a graduate of Rush Medical College, has opened an office in Northfield for the practice of general medicine.

* * *

Mrs. Winona O. Mann, widow of Dr. Arthur T. Mann, died on April 21. She had been a resident of Minneapolis for more than fifty years.

* * *

Dr. F. E. Harrington, city health commissioner, has been appointed acting superintendent of General Hospital, Minneapolis.

* * *

Dr. J. Arnold Borgen of Rochester was elected president of the Central Clinical Research Club at a meeting held last month.

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Dr. Thomas Armstrong, formerly of the Mayo Clinic, Rochester, has moved to Michigan City, Indiana, where he is associated with the Warren Clinic.

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Dr. C. F. McComb is one of the oldest established members of the medical profession in Duluth, having been in continuous practice there since 1883.

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Dr. H. B. Harlow has come from Cleveland, Ohio, to join the Lenont-Peterson Clinic at Virginia, specializing in the eye, ear, nose and throat field.

* * *

Dr. A. G. Berger has been appointed to succeed Dr. R. T. Westman as chief city quarantine officer of Minneapolis.

Dr. and Mrs. M. L. Mayland of Faribault have just returned from Florida, where they spent a two months' vacation.

* * *

Dr. E. V. Pellettiere recently joined the Bratrud Clinic in Thief River Falls, taking charge of the eye, ear, nose and throat department.

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Dr. Homer Hedemark has recently become affiliated with the Bratrud Clinic in Thief River Falls, specializing in internal medicine and surgery.

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Dr. F. E. Harrington of Minneapolis will attend the National Tuberculosis Association convention in Milwaukee, May 31, June 1 and 2.

* * *

Dr. Paul W. Giessler announces his association with Dr. John F. Pohl, recently of Boston, at 1945 Medical Arts Building, Minneapolis. Their practice will include fractures and orthopedics.

* * *

Dr. John J. Gelz, of St. Cloud, who is in Tucson, Arizona, because of ill health was reported to have had a serious attack of illness in April, but is now improving.

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Dr. A. F. Sether is opening an office in the Oberle building at Ruthton, for the practice of medicine. Dr. Sether was formerly stationed at a CCC camp at Grand Rapids.

* * *

Dr. Paul F. W. Rick, formerly of Saint Paul, has opened an office for the practice of medicine in Le Center, Minnesota. He has just completed his internship at the General Hospital, Minneapolis.

* * *

Dr. Wilfred J. Bushard, of Minneapolis, who has just completed his internship at the General Hospital, Minneapolis, has opened an office at Bird Island, for the practice of medicine.

* * *

Dr. T. S. Soine of Barnesville has gone to Newberg, Oregon, where he expects to practice. He has been succeeded by Dr. Carl Simison, who has been associated with his father, Dr. C. W. Simison, at Hawley.

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Dr. R. N. Barr of the Minnesota Rural Health Service, Minneapolis, was the guest speaker at the P.T.A. meeting in Fergus Falls on May 10. He spoke on public health matters in ancient and modern times.

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Mrs. Adelgunda Meyerding, mother of Dr. E. A. Meyerding of Saint Paul, and Dr. Henry W. Meyer-

ding of Rochester, died at Colonial Hospital in Rochester, early in May. She was a pioneer resident of Saint Paul, having come to that city in 1859.

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Dr. Arthur C. Strachauer, professor of surgery in the Medical School of the University of Minnesota, gave the public lecture on cancer in conjunction with the annual meeting of the Iowa State Medical Association at Sioux City, Iowa, May 12, 1937.

* * *

Dr. L. R. Boies of Minneapolis, with a net score of 66, was the winner of the annual golf tournament of the Minnesota State Medical Association at the Midland Hills club. Dr. Gus Edlund of Saint Paul, with a score of 80, won low gross honors.

* * *

Dr. Henry E. Michelson was the principal speaker at the meeting of the Camp Release District Medical Society at Montevideo on Thursday evening, May 20, his subject being "Syphilis and Its Treatment." Dr. Michelson addressed the Wayne County Medical Society, Detroit, Michigan, on the same subject, May 24.

* * *

Dr. Gaylord W. Anderson, deputy commissioner of public health in Massachusetts, has been appointed Head of the Department of Preventive Medicine and Public Health of the University of Minnesota, to succeed Dr. Kenneth Maxcy, who recently resigned to take a similar position at Johns Hopkins University, Baltimore.

* * *

Dr. Ragnar Westman, epidemiologist, Minneapolis Division of Public Health, has been appointed Director of the County Health Unit in Bay County, Michigan, with headquarters in Bay City. This is a newly formed unit, no work of this kind having been done previously in that county. Dr. Westman is a graduate of Johns Hopkins Medical School, 1936.

* * *

A large number of physicians and surgeons living in many parts of the United States returned to Minneapolis on May 11 for the annual meeting of St. Mary's Hospital Internes' Association. Dr. A. E. Ritt of Saint Paul is president, and Dr. M. W. McInerney and Dr. R. F. Herbst, both of Minneapolis, are vice president and secretary.

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Dr. Hewitt B. Hannah and Dr. Joel C. Hultkrans announce their association in partnership in the practice of neuropsychiatry with offices at 511 Medical Arts Building, Minneapolis. Dr. Hultkrans has been practicing neuropsychiatry in Saint Paul, but will give up his office there upon opening an office for the continuation of the practice of the specialty in Minneapolis.

HOSPITAL NOTES

May 16 was the twenty-eighth anniversary of the dedication of the St. Lucas Hospital at Faribault. The hospital was constructed in 1909 at a cost of \$65,000.

* * *

Miss Mary R. Fye, former superintendent of Franklin Square Hospital at Baltimore, Maryland, is the new director of the Municipal and Detention Hospitals, at Virginia, Minnesota.

* * *

Joseph G. Norby, superintendent of Fairview Hospital for fifteen years, has resigned to accept a similar position at Columbia Hospital, Milwaukee. He has been succeeded by E. J. Hauge, of Fort Dodge, Iowa.

* * *

Dr. W. H. Halloran, of Jackson, is adding eight new rooms to his hospital, which will include a fully equipped operating room, x-ray equipment and modern new sterilization room. This hospital has been in operation for the past twelve years.

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The new psychopathic ward at the University Hospital was opened Tuesday, April 27. This was erected at a cost of about \$150,000, and has a bed capacity for forty-two patients. The equipment is of the newest type, including safety devices of various kinds. Two comfortable lounge rooms and a wire-enclosed balcony walk are also provided, as well as complete kitchen facilities.

* * *

The municipal hospital at Virginia is to be extensively improved this spring, with the assistance of WPA funds. The Hospital Association is to supply the materials. Included in the improvements are a garage and a tunnel to connect the nurses' new home with the hospital. The hospital itself has just recently been completed.

* * *

Northwestern Hospital, Minneapolis, now in its 55th year of active service, is planning an elaborate program for a reunion and homecoming of its former interns. This will take place on Saturday, June 19, and will occupy the entire day. From 8:00 A. M. to 1:00 P. M. clinical and other scientific demonstrations will be conducted by the staff at the hospital, followed immediately by luncheon in the institution. Then the entire gathering will take a boat ride on the Mississippi, leaving at 3:00 P. M. and returning about 10:00 P. M. During the boat trip there will be a program of varied entertainment, with light refreshments and dinner on the boat at 6:00 P. M. The boat is the "Donna May," a large and seaworthy craft commanded by Captain W. G. Holstrom.

The committee in charge of all arrangements, Dr. A. E. Benjamin and Dr. W. A. Hanson, is eager to get in touch with all former interns of Northwestern Hospital and asks that any who know the names and present addresses of any of them will please inform the committee.

In Memoriam

Julian A. Du Bois

1856—1937

DR. JULIAN A. DU BOIS, a prominent resident of Sauk Center, where he had practiced for over fifty years, passed away at his home at the age of eighty-two, May 4, 1937, after a month's illness.

Dr. Du Bois was born in Aztalan, Wisconsin, January 8, 1856. He attended the University of Wisconsin from 1873 to 1877. He was a classmate of the late Senator Robert M. La Follette and remained a close friend of the senator throughout his life. In 1879 Dr. Du Bois graduated from Rush Medical College with high honors and began practice at Lake Mills, Wisconsin. Later he went to Denver, where he took an internship of thirteen months at the Rapahoe Hospital.

He then went to Saint Paul, intending to practice here, but an epidemic of smallpox breaking out at Spring Hill, Stearns County, he was sent by the State Board of Health to vaccinate residents of the community. His successful handling of the situation received high commendation from state officials.

In 1882, Dr. Du Bois located in Sauk Center, where he had practiced since. For many years he was surgeon there for the Great Northern and Northern Pacific railroads, besides conducting an extensive and in the early days a strenuous practice.

Dr. Du Bois was married April 1, 1881, to Laura R. Faville of Lake Mills, Wisconsin, and on April 1, 1931, their golden wedding was celebrated. To them were born three sons, Ben Du Bois, postmaster at Sauk Center; Dr. Julian F. Du Bois of Sauk Center, secretary of the Minnesota State Board of Medical Examiners; and Faville Du Bois, who was killed by lightning in 1906.

Dr. Du Bois was a candidate in 1902 and again in 1914 for Congress from the Sixth District, but although he gave a good account of himself, he was not elected. He was also a candidate for the State Senate at one time. He was twice elected mayor of Sauk Center and for many years served as city treasurer.

Appreciative of good literature, he was active in library work and for many years was a member of the Board of Directors of the Bryant Library. He was president of the Merchants National Bank and later president of the First State Bank and successfully operated several farms in his community.

The following tribute appeared in the *St. Cloud Daily Times*:

"The sad news came from Sauk Center this morning of the death of one of the distinguished citizens of the state, who had obtained more of life than most. He was one of the earliest of the pioneer physicians of Stearns county, and the dean of the medical fraternity. The pioneer doctors faced hard conditions. They had to visit patients in the country for miles, when the

roads were merely trails, but they went sometimes at the peril of their lives in bad storms. That was real heroic service. When called to administer to the ill, he accepted the challenge as a test of his skill and care. To him each serious illness was a battle—and the victories he won gave him an admirable reputation in healing. When death came, as it comes to all men, and today to Dr. Du Bois, his patients knew that he had done his utmost, and they were grateful.

"He was a well educated man, gaining knowledge each day, a keen student of affairs, a lover of good literature, himself a gifted poet and writer.

"But his great affection was for human beings. It was often said that he loved folks, and was ever ready to serve them, and to him each individual was a child of God, to be aided along the way in usefulness and happiness, with an understanding of their weaknesses and of their virtues.

"He had a most charming personality, wise in the selection of his friends, his choice not on wealth or position, but on character and good fellowship.

He lived a long and useful life, with that independence of spirit and great courage that made him an outstanding man of his community and a gallant leader.

"It can be said of him in most complete assurance: He was the captain of his soul, and never was his head bowed in fear."

Halvor Holte

1857-1937

DR. HALVOR HOLTE, a pioneer physician of Crookston, died January 2, 1937, at the age of seventy-nine.

Dr. Holte was born at Stavanger, Norway, July 11, 1857, and came to America at the age of fifteen. He was the first homesteader at Holt, Minnesota, which was named for him.

Dr. Holte was married in 1902 to Henrietta Lunde at Maplebay. His wife, one son, Junius, and one daughter, Mrs. George Hagen, survive him.

In 1897 Dr. Holte established the Bethesda Hospital and launched the movement which resulted in the establishment of Sunnystre Sanatorium.

George T. Joyce

1879-1937

DR. GEORGE T. JOYCE, in general practice in Rochester, Minnesota, since 1904, died March 29, 1937, from coronary thrombosis.

Born at Stewartville, Minnesota, January 25, 1879, he attended the rural schools in that vicinity and later the high school in Rochester for two years. After a two year preparatory course in Des Moines, he became a student at the medical school of the University of Illinois, where he graduated in 1904.

Dr. Joyce began practice in Rochester in 1904 and for three years was associated with Dr. Charles T. Granger. He served as councilman from 1908 to 1910 and on the utility board for one term. He was a member of St. John's Catholic Church at Rochester, and belonged to the Knights of Columbus.

Dr. Joyce was a member of the Olmsted County Medical Society and a past president. He was also a mem-

REPORTS AND ANNOUNCEMENTS

ber of the Minnesota State Medical, the American Medical and the Southern Minnesota Medical Associations.

In 1906, Dr. Joyce married Josephine Baier. He is survived by his widow, two daughters, Mrs. Thomas Starkey of Beardstown, Illinois, and Helen, a student at the University, and a son, George T., Jr. A nephew, Dr. George L. Joyce, recently left Stewartville to take over his uncle's practice in Rochester.

Elias Potter Lyon

1867-1937

ELIAS P. LYON, former dean of the Medical School of the University of Minnesota, died May 4, 1937, at Trafford, Pennsylvania. Dr. and Mrs. Lyon were on their way back to Minneapolis from Florida, where they had spent the winter. At the time of his retirement last June, Dean Lyon had served longer than any medical school head in the country.

Dean Lyon was born in Cambria, Michigan, in 1867. He attended Hillsdale high school and graduated from Hillsdale College, Michigan, in 1891. He received his Ph.D. degree at the University of Chicago in 1897 and took additional work at Heidelberg University, in Germany.

From 1897 until 1900 he served as instructor at the Bradley Polytechnic institute in Peoria, Illinois, and became assistant professor of physiology in the University of Chicago and later assistant dean in Rush Medical College from 1901 to 1904. He was dean of medicine at St. Louis University from 1904 until 1913. He then came to Minneapolis to begin his service as dean of the medical school at the University of Minnesota.

While at the University of Chicago, Dean Lyon was associated with Dr. Jacques Loeb, known for his scientific attainments in connection with the Marine Biological Laboratories at Woods Hole, Massachusetts. In 1894, he was the Associated Press correspondent and biologist on the expedition to Greenland with Fred A. Cook when he claimed to have discovered the North Pole. At the time of his death he was a lieutenant colonel, retired, in the sanitary corps of the United States Army.

Dean Lyon took a part in the remarkable development and growth of the University of Minnesota Medical School during the years when he was dean. He first installed the system of full time teachers in certain departments of the medical school, and contributed to many journals in the fields of physiology, medical education, nursing education and general science. He was a former officer of Alpha Tau Omega and Sigma Xi fraternities.

On June 10, 1936, a testimonial dinner was held at the University for a number of retiring members of the medical school faculty, among whom was Dean Lyon. At this dinner Dr. Adam M. Smith announced the establishment by the Minnesota Medical Alumni of the Elias Potter Lyon lectureship in honor of the re-

tiring dean. Tribute was paid by President Coffman to the sterling qualities of the dean, and Dr. Diehl outlined the growth and development of the medical school from its beginning in 1888 and presented a portrait of Dean Lyon by Brewer, to the University. Dean Lyon's response and the addresses of those present at the dinner, appeared in the December, 1936, number of MINNESOTA MEDICINE.

Dean Lyon served the Medical School for twenty-three of the forty-nine years of its existence. During that period many additions were made to the physical equipment of the school, many full time faculty members were added and the affiliation of the medical school with the Mayo Foundation was accomplished.

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR JUNE

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 9:45 o'clock every Saturday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

June 5—Avitaminosis

June 12—Water Cures

June 19—Diverticulitis of the Colon

June 26—Calcium and Dentistry

MINNESOTA RADIOLOGICAL SOCIETY

The annual meeting of the Minnesota Radiological Society was held in Saint Paul, Minnesota, in connection with the meeting of the Minnesota State Medical Society. The annual Carman Lecture was delivered to the general assembly of the Minnesota State Medical Association by Dr. Edward H. Skinner of Kansas City on "Reflections on the Roentgenology of Fractures."

Dr. Skinner also addressed the Minnesota Radiological Society on the subject "Comments upon Early Books upon Electricity and the Roentgen Ray."

Dr. Robert S. Stone of San Francisco delivered the annual Christian Lecture on Cancer before the State Medical Society. His subject was "Irradiation Therapy of Tumors with a Consideration of the Possibilities of Supervoltage X-rays." He also addressed the Minnesota Radiological Society on "The Professional and Economic Status of the Radiologist."

Officers for the coming year were elected as follows: President, Dr. Walter H. Ude, Minneapolis; vice president, Dr. Leo G. Rigler, Minneapolis; secretary-treasurer, Dr. Harry Weber, Rochester.

MINNESOTA HOSPITAL ASSOCIATION

At the convention of the Minnesota Hospital Association held early this month, the following officers were chosen: Dr. Peter D. Ward of Miller Hospital, Saint Paul, president; A. G. Stasel, Eitel Hospital, Minneapolis, first vice president; Miss Esther Wolfe, R.N., Hutchinson Community Hospital, Hutchinson, second vice president; and Ray Amber, University Hospital, Minneapolis, treasurer.

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MINNEAPOLIS COUNTY SOCIETY

Dr. Henry L. Ulrich was named president of the Minneapolis County Medical Society at a meeting held Monday night, May 10. Dr. Norman Johnson was named first vice president, and Dr. F. C. Rodda, second vice president. The following committeemen were chosen: *Executive Committee*, Dr. James K. Anderson and Dr. Gilbert Cottam; *Board of Censors*, Dr. Julius Johnson and Dr. Ivar Sivertsen; *Board of Trustees*, Dr. Erling W. Hansen and Dr. James S. Reynolds; *Ethics*, Dr. Stephen H. Baxter and Dr. Richard R. Cranmer. Delegates named to the State Medical Association were Dr. Henry Bayard, Dr. Douglas P. Head, Dr. C. O. Aland, Dr. Erling S. Platou and Dr. Chester A. Ewart.

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RICE COUNTY SOCIETY

The Rice County Medical Society held a meeting in the Faribault Clinic Rooms, Tuesday, April 27. Dr. R. Kamman of Saint Paul presented an interesting lecture on "The Psychiatric Disorders Coming in the Evolutionary Period of Life." Dr. E. R. Beede spoke on "Sterilization in Feeble Minded Girls." Discussion followed by Dr. A. L. Haynes and J. M. Murdock, Superintendent.

The Nutritional Significance of Gelatin

The Council on Foods has endeavored to evaluate the nutritional claims made for gelatin. In view of the available evidence the Council believes that gelatin properly made is a wholesome food, that it has special usefulness when one desires to add variety to the diet by incorporating gelatin in nutritious soups and pleasant desserts, and that for these reasons it is often a useful food for inclusion in the diet of healthy persons or of sick or convalescent patients. Gelatin appears to be well tolerated. The claim that gelatin is an aid in the digestion of milk, however, is in the opinion of the Council not established. The claim that gelatin is of value as a source of amino-acetic acid in the treatment of some of the myopathies cannot be recognized; in the light of present evidence, gelatin has no special significance as a source of amino-acids in the diet. Indeed, it is notoriously deficient in certain essential amino-acids. (J. A. M. A., Dec. 6, 1936, p. 2132).

WOMAN'S AUXILIARY

MRS. E. M. HAMMES, *President*,
1456 Summit Avenue, Saint Paul
MRS. A. A. PASSER, *Editor, Press and Publicity*, Olivia

MRS. J. F. Norman of Crookston was installed as president of the Woman's Auxiliary at the annual meeting held in Saint Paul, May 3, 4 and 5. Other officers elected were: Mrs. W. S. Roberts, Minneapolis, president-elect; Mrs. J. J. Ryan, Saint Paul, first vice president; Mrs. John Dordal, Sacred Heart, second vice president; Mrs. R. S. Forbes, Duluth, third vice president; Mrs. R. J. Josewski, Stillwater, treasurer (re-elected); Mrs. Harold Wahlquist, Minneapolis, recording secretary; Mrs. G. E. Hertel, Austin, auditor.

Mrs. E. M. Hammes, Saint Paul, retiring state president, presided at all sessions, which were well attended.

Kandiyohi-Swift-Meeker

A regular meeting of the Auxiliary was held in February and a new Constitution drafted. There are sixteen paid-up members in the re-organized group.

At the March meeting the members were guests of Mrs. Hutchinson, at the State Asylum, and adjourned to the Lakeland Hotel in Willmar to see colored slides of a Canadian hunting trip which were shown by Dr. Kenneth Bulkley. Mrs. E. M. Hammes, of Saint Paul, was the guest speaker of the Auxiliary on April 14. Mrs. A. F. Branton of Willmar is president of this group. Other officers are Mrs. C. L. Scofield, Benson, vice president; Mrs. H. Hutchinson, Willmar, secretary; Mrs. H. Johnson, Litchfield, treasurer.

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Scott-Carver

The Scott-Carver Medical Society and Auxiliary met at Mudcura Sanitarium at Shakopee, March 30. Members of the Auxiliary were entertained at the home of Mrs. H. P. Fischer. The regular business meeting included election of officers. Mrs. Wm. Maertz of New Prague was re-elected president. Mrs. Schemphilling of Chaska, vice president, and Mrs. Charles Cervenka, secretary-treasurer. Mrs. Clement of Shakopee joined the Auxiliary.

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West Central

A regular meeting of the West Central Auxiliary was held on April 14 at the Merchants Hotel in Morris. The state president, Mrs. E. M. Hammes, was a guest at the seven o'clock dinner and gave an interesting talk at the business session which followed.

The Auxiliary voted a memorial offering of two dollars in memory of Mrs. Fitzgerald of Morris, who had served the Auxiliary faithfully in many capacities.

Officers elected at this meeting were Mrs. Otto Bergan, Clinton, president; Mrs. F. W. Behmler, Morris, vice president; Mrs. I. L. Oliver, Graceville, secretary-treasurer. Mrs. R. Bate of Glenwood was voted a new member.

TRANSACTIONS of the MINNEAPOLIS SURGICAL SOCIETY

Meeting of October 1, 1936

The regular monthly meeting of the Minneapolis Surgical Society was held in the lounge of the Hennepin County Medical Society rooms on October 1, 1936. The meeting was called to order by the president, Dr. Ivar Sivertsen.

The following scientific program was presented.

OPERATIVE TREATMENT OF HYDRONEPHROSIS DUE TO OBSTRUCTION AT THE URETEROPELVIC JUNCTION

C. D. CREEVY, M.D.

Abstract

The speaker described the causes of hydronephrosis due to obstruction at the ureteropelvic junction as due to fibrosis in or about the ureter, accessory renal vessels associated with nephroptosis, neurogenic dysfunction of the pelvis or ureter, and non-dependent attachment of the ureter to the renal pelvis.

Symptoms may consist of continuous or intermittent pain in the flank, recurrent or chronic pyuria or reflex gastro-intestinal disturbances without pain. Dietl's crisis is rarely seen. The kidney may be palpable during attacks and recurrent pyelonephritis is the most frequent picture.

Diagnosis is made by a pyelogram, which shows a hydronephrosis and normal ureter.

Fifteen of the twenty-five cases seen at the University Hospital since April, 1930, were removed, some because of late medical consultation, some because it is not realized that kidneys containing as little as one-third of their parenchyma can be reclaimed by conservative operation. Non-operative procedures are of limited value.

Kuster (1892) was probably the first to operate conservatively for this condition. He ligated the ureter and, after cutting it off below the ligature, reimplanted it into the dependent portion of the pelvis. This operation, though still widely used, may lead to recurrence. Fenger (1894) incised the stricture longitudinally and closed it transversely, but it has been shown that this may result in a kink in the ureter.

When the ureter is angulated and plastered against the pelvis, von Lichtenberg has made a lateral anastomosis between them based on the Finney pyloroplasty. The method has been used successfully by Walters. It has the objectionable feature that the spur formed between the ureter and pelvis may become edematous and cause obstruction.

Gayet has advocated resection of the redundant pelvis in such a manner as to place the ureter in a dependent position, but this operation fails to correct the obstruction, which Gayet assumed to be due to the high attachment of the ureter.

The author does not believe that anomalous vessels cause obstruction unless the ureter is angulated and fixed around them by peri-ureteral fibrosis or nephrop-

tosis and prefers in such cases to widen the ureteropelvic junction. Simple ligation of the aberrant vessel results in infarction of a portion of the kidney and possible infection necessitating removal of the kidney.

To the author's mind the most satisfactory method of dealing with these cases is the operation devised by Schwyzer and improved by Foley (figure three).

Schwyzler divided the posterior surface of the upper inch of the ureter by a longitudinal incision which he then prolonged upward onto the pelvis in the form of a V. The apex of the triangular flap of the pelvis was thus outlined was pulled down to the lower end of the incision in the ureter, and the incision closed as a V thus widening the junction without interrupting its continuity or angulating it.

Foley has moved the longitudinal incision in the ureter onto its lateral aspect, and extended it above the ureteropelvic junction. One limb of the V incision in the pelvis is placed on its anterior, and the other on its posterior, surface, so that suture places the junction in a dependent position. The V-shaped closure is made by carefully placed interrupted sutures of 0000 chromic catgut on atraumatic needles. These sutures include only the muscularis and adventitia, and do not penetrate the mucosa. A small catheter is placed through the anastomosis and brought out through the posterior surface of the pelvis. Openings into the catheter are so placed that it drains the pelvis, diverts the urine and splints the anastomosis during healing. More recently Foley has employed an additional catheter as a pyelostomy. Three painful experiences with slipping of such tubes with consequent extravasation of urine into the wound have led me to supplement the diversion of the urine by inserting a No. 22 Malecot catheter into a lower calyx of the kidney as a nephrostomy.

Foley has placed considerable emphasis on the importance of nephropexy, but the author has purposely avoided high fixation of the kidney. He has simply held it high enough to avoid kinking of the ureter by suturing the perirenal fat and peritoneum loosely beneath the lower pole of the kidney, somewhat in the manner of Deming. The results have convinced me that a painstaking nephropexy merely adds unnecessarily to the length of the operation.

The author has performed this operation nine times, supplementing it twice by excision of redundant pelvic wall, and once by resection of the lower pole of the kidney, together with a contained stone which could not be located. In an additional case, Küster's division of the ureter with reimplantation into the dependent portion of the pelvis was done and supplemented by excision of most of the wall of the pelvis.

The first operation was done in November, 1932, the last in June, 1936. The patients ranged in age from ten to fifty-seven years. There were no deaths. Several presented postoperative complications, but all have recovered and are entirely symptom-free at the present

ne, with the exception of one patient who required phrectomy ten weeks after operation because of persisting obstruction and extravasation of urine. All cases operated upon more than six months ago have had pyelograms made at least six months, and in one instance three years, after operation, and have functioning kidneys secreting clear, uninfected urine. In all but one there has been a notable reduction in the size of the pelvis since operation; in the one in which the size of the pelvis has remained unchanged (figure four) an infection of four years' standing has disappeared, together with all symptoms.

Complications of varying severity followed operation in five cases.

In the first of these, a thirteen year old boy, an accessory vessel to the lower pole was divided, a large portion of the pelvis was resected, and the ureter was implanted into a dependent position. A fever of 105° F. without subjective or objective findings appeared on the third day and lasted three days, apparently from infarction of the lower pole of the kidney. Thereafter recovery was normal. One and one-half years later the patient was well, the preoperative infection had disappeared, and the kidney functioned well as judged by excretory urography, considering that only one-third of the normal amount of renal parenchyma was present at operation.

In the second, a male of twenty-five, a pseudoleukemia followed operation, the white blood count rising to 7,000 and the hemoglobin falling from 90 to 40 without evidence of hemorrhage. This reaction subsided eventually following transfusion. A year later the urine from the right kidney was clear, and retrograde pyelography disclosed a very marked reduction in the size of the renal pelvis.

In the third, colic in the unoperated kidney occurred when the patient got up after operation (resection of the lower pole of the right kidney with an enclosed stone, Y-plasty); a stone was subsequently passed from the left side. Retrograde pyelography 18 months after operation disclosed a considerable reduction in the size of the kidney, which secreted clear urine.

In the fourth, a woman of 35, the incision discharged urine ten weeks after operation; at cystoscopy a piece of necrotic tissue was seen protruding from the urethral meatus. Closure of the fistula followed excision of the necrotic tissue and urethral dilatation.

In the fifth patient, a woman of thirty, operation was a failure due to a technical blunder. She had a stricture at the ureteropelvic junction, another in the upper third of the ureter, and a third at the upper margin of the sacrum. Repeated urethral dilatations proving fruitless, Y-plasties were done on the upper two strictures and a nephrostomy made with a plain catheter, with the intention of repairing the third stricture later. An extravasation of urine followed slipping of the tube, and nephrectomy had to be done some months later for a renal fistula.

Discussion

DR. FREDERIC E. B. FOLEY, St. Paul (by invitation): Naturally Dr. Creevy's presentation is gratifying to me or it makes a fine endorsement of the operation I have devised. As my operation played such an important part in his presentation, modesty forbids me to further compliment it. I hope the others will.

The fact is that the results reported by Dr. Creevy in his 9 cases and the results secured in my own twenty operations in nineteen patients are so vastly superior to the results of most plastic operations for this condition that it is quite remarkable. On the whole the results in these twenty-nine plastic operations have been almost

uniformly good and only 1 secondary nephrectomy, as reported by Dr. Creevy, was required. This is something new for plastic operations.

Offhand one would think that results so superior to those secured with other operations mean that the particular form of operation itself is responsible. I would like to believe this but am not sure of it. I have seen other forms of plastic operation executed in other hands and have noted the crudeness of the suturing and the coarse suture material used. I marvel that a single good result could be secured with such technic. Dr. Creevy and I have used very fine chromic catgut (0000) on an atraumatic needle as prepared for me by Davis and Geck. We have placed the interrupted sutures very closely and have made them embrace only the muscularis, with careful avoidance of the mucosa. Meticulous care in this detail probably gives healing in exact apposition and without inflammatory infiltration the result of foreign body reaction. I am not so sure that this particular detail of technic rather than the plan of operation is not the thing responsible for our good results.

My further comments I wish to illustrate with lantern slides.

All of the plastic operations for correction of stricture at the ureteropelvic junction which have been described are adoptions from general surgery and do not represent contributions of anything fundamentally new. In reviewing them it becomes apparent how the procedures of general surgery have been appropriated to this purpose and how the several methods have come about through a natural evolution. As shown here, end-to-side anastomosis was employed in various viscera before its application as pyeloneostomy by Kuster in 1891.

The principle of longitudinal incision and transverse suture was employed as a pyloroplasty in the Heineke-Mikulicz operation before it was adopted for use at the uretero-pelvic junction by Fenger.

The principle of continuous side-to-side union was used in various plastic procedures before its application as a pyloroplasty by Finney and later its use as a pelvio-ureteroplasty—a particular form of operation for junction stricture popularized by Von Lichtenberg.

There is actually very little difference between the longitudinal incision and transverse suture of a straight incision and the same plastic principle applied to a Y incision. A Y incision is really a longitudinal incision with split end giving a V-shaped flap which is slid into the lower angle of the incision and so minimizes the distortion that occurs with transverse suture of an unsplit incision.


Durante applied the Y plastic as a pyloroplasty before its use at the ureteropelvic junction by Schwyzer.

There is the same difference between the Fenger and Finney operations as there is between the Schwyzer operation and mine. In the Fenger operation using a straight incision and in the Schwyzer operation using a Y incision, the incision is made in one plane and the tissues are moved in this same plane into new relations for suturing but inevitably with some degree of puckering and distortion. In the Finney operation using a straight incision and in mine using a Y incision, the incision is made in two planes and the two planes each containing an opening, the results of incision are directly opposed to each other for suture with no distortion whatever.

(Slide) This shows the difference between Dr. Schwyzer's original application of the Y plastic at the ureteropelvic junction and the operation which I have devised. It will be noted that in Dr. Schwyzer's plan the incision is made in one plane while in mine it is made in two planes. In the Foley operation the stem of the incision is placed in the lateral wall of the ureter standing opposite the medial wall of the pelvis. It extends through the ureteropelvic junction and is turned

TRANSACTIONS OF MINNEAPOLIS SURGICAL SOCIETY

RESULTS OF OPERATIONS

	Years Since Operation	Grade Hydro-Nephrosis	CHECK-UP PYLEOGRAM		SYMPTOMATIC RELIEF		
			Result	Time After Operation	Result	Time After Operation	
1	13	4	Excellent	13 Yrs.	Excellent	13 Yrs.	
2	11	3	Excellent	10 Yrs.	Excellent	10 Yrs.	
3	9	2	Excellent	1 ½ Yrs.	Excellent	3 ½ Yrs.	Death 3 ½ Yrs. of Other Cause.
4	7	2	Fair	7 Yrs.	Good	7 Yrs.	
5	7	1	Poor	2 Mos.	Poor	6 Yrs.	
6	6	3-4	Excellent	6 Yrs.	Excellent	6 Yrs.	
7	6	2	Good	2 Mos.	Excellent	6 Yrs.	
8	6	3-4	Excellent	24 days			Postoperative Death 24 Days.
9	6	3	Excellent	1 Yr.	Excellent	5 Yrs.	
10	3	3-4	Fair	3 Yrs.	Excellent	3 Yrs.	
11	3	3					Postoperative Death 4 Days.
12	3	3-4	Fair	2 Yrs.	Good	2 Yrs.	
13	2	3	Fair	1 Mo.	Excellent	5 Mos.	Death 5 Mos. of Other Cause.
14	2	2-3	Good	1 Yr.	Excellent	1 Yr.	
15	1	2-3	Fair	7 Mos.		7 Mos.	
16	L ¾1	2-3	Good	6 Mos.	Excellent	8 Mos.	
	R ½1	2	Fair	3 Mos.	Excellent	5 Mos.	
17	¾1	1	Good	4 Mos.	Excellent	7 Mos.	
18	¼	4	Fair	3 Mos.	Excellent	3 Mos.	
19	1-12	3	Good	1 Mos.	Excellent	1 Mo.	

downward into a second plane represented by the medial wall of the pelvis below the junction.

(Slide) It appears that the lowering of the ureteropelvic junction which this method accomplishes is of importance. If the high insertion of the ureter is not corrected a membrane valve results similar to the ureterovesical valve. When the pelvis fills under tension the valve loses and impedes the passage of urine into the ureter in the same way that the ureterovesical valve prevents regurgitation of urine from bladder into ureter.

In addition to widening the stricture the operation accomplishes three things which should be regarded as desirable in any operation for this purpose. It avoids puckering, it gives gradual funneling of pelvis into ureter and it corrects the high insertion of the ureter.

(Slide) This and other lantern slides of the pre-operative and post-operative pyelograms, together with comment, will demonstrate the results achieved in some of my cases.

It will be noted from the description of the operative technic that the method is best applicable in cases of high insertion of the ureter providing a segment of ureter below the junction lying in contact with the pelvis. These relations are not found in all cases. By certain modifications it is usually possible to well suit the procedure to the condition found. (Slide) For example, in this case a sacculi of dilated pelvis with adhesions about it bulged medially downward over the ureteropelvic junction. With the modification of technic illustrated here it was possible to apply the operation to this rather unusual situation.

(Slide) In this case the strictured junction entered a dependent portion of the extrarenal pelvis with insufficient room between the junction and sinus renalis in

which to make the Y incision. By resecting the paretchyma covering the intrarenal portion of the pelvis and the inferior calyx, a surface in which to place the Y incision was exposed and the technic was executed in the usual way. The post-operative pyelogram shows the result a few weeks later.

This tabulation shows the results of the twenty operations in nineteen different cases. Of the nineteen patients fifteen are living at the present time. It will be noted that the anatomic condition following operation has been determined in all cases except one of early postoperative death and that in a substantial number of the cases this check-up determination of anatomic condition was made at a long interval following operation. In these cases the result noted should be regarded as the permanent end-result. Symptomatic relief as determined by follow-up information from the patient was obtained in all cases, many of them at long interval following operation. It will be noted that the symptomatic result was excellent or good except in one case with poor result and in one case, the fifteenth, in which there was no preoperative complaint of pain.

OPERATIONS SIX OR MORE YEARS AGO

(Seven Surviving Patients)

	Functional and Anatomic Result	Symptomatic Result
Excellent	4	5
Good	1	1
Fair	1	0
Poor	1	1

This is a tabulation of functional and anatomic results and symptomatic results in the seven surviving patients who were operated upon six or more years ago.

OPERATIONS LESS THAN SIX YEARS AGO

(Eight Surviving Patients; Nine Operations)

	Functional and Anatomic Result	Symptomatic Result
Excellent	0	7
Good	4	1
Fair	5	0
Poor	0	0

This is a tabulation of functional and anatomic results and symptomatic results in the eight surviving patients who were operated upon less than six years ago.

Many of the check-up pyelograms have not shown the decrease of pelvic capacity that one might consider a criterion of good result. Actually diminution of pelvic capacity is not a true criterion of good result. If the obstruction is relieved and the resistance to the outflow of urine from the pelvis is removed the operation has accomplished its purpose. In a vast majority of these cases this appears to have been attained and has been marked by complete symptomatic relief and improved function as determined by dye excretion tests. An accompanying decrease of pelvic capacity is gratifying but not essential to appraising a result excellent.

DR. ARNOLD SCHWYZER, St. Paul (by invitation): Maybe some of you who have not done the operation think that it is an intricate affair, but this is not the case. I want to express my great gratification for hearing these two speakers. In fact, I could not disagree with a single thing that Dr. Creevy has said, except that Dr. Allmann was a German.

DR. CREEVY: He must have been a Swiss.

DR. SCHWYZER: When I was abroad I saw three cases of hydronephrosis where the kidney had been removed, and I was amazed how small these hydronephroses were. It seemed to me a plastic could have been done. If you have the ureter here, and here the pelvis (illustrating with his hand) the junction of the two is often a quite narrow place and there will often be fibrous tissue around it. You want to be sure that you are not going to have a second stricture here. If you only cut it longitudinally and sew it transversely, you will probably have some puckering and the same story afterward. If you make a longitudinal incision through the ureteropelvic junction and then at the upper end of this incision continue it by two diverging cuts, a flap is thus formed from the pelvis. You bring the flap from the pelvis down, with a stitch fastening the tip of the flap to the lower end of the longitudinal incision. Even if the suturing should not be very exact, the flap will stay there. Even if there should be a leak, it will stay there anyway. The epithelium is there as you have the flap at the ureteropelvic junction. This is the important point. I was glad to hear Dr. Creevy state that he didn't think that the high implantation of the ureter was primary. Imagine that you have no retention in a normal pelvis of the kidney. You have connective tissue around the ureteropelvic junction. If it is a little stronger on one side than on the other the pelvis will bulge the weaker area. That will make the lower portion of the pelvis bulge easier and make the ureter look like abnormally implanted high in the pelvis.

Dr. Creevy showed pictures of the drainage tubes. The catheters for drainage were inserted in one picture into the pelvis and in others through the cortex. You don't want to bother the pelvis. It is in the pelvis that almost all the kidney stones are formed. Very

rarely one sees one in the parenchyma. For this reason it is best to leave the pelvis alone as much as possible. Make a small incision through the cortex and your catheters will not bother. Do not irritate the pelvis at all. Infection was also mentioned. Infection is a mean thing in these cases. But I have had two cases where the operation mentioned could be done anyway. In the first case the hydronephrosis contained about one pint. There was considerable pus and some fever. I saw this woman not so long ago, a little over twenty years after the operation, and she is in good health. Another case, a girl about eight years old, was brought in with a high fever, some over 103°. She had an acute hydronephrosis with pyelitis, and severe pain. The patient made a good recovery even though I had to operate in the acute stage.

DR. GILBERT J. THOMAS: Urologists have gone conservative and are gradually eliminating many of their surgical jobs. Stones in the kidney are being dissolved, the prostate is being partially removed by instruments and not by open operations, and now we have a surgical method of saving kidneys that were formerly removed surgically when obstruction occurred at the ureteropelvic junction. When we read Dr. Creevy's paper, we will get a much better idea of his technic and the reasons for the excellent results he has obtained.

Are these bands at the ureteropelvic junction acquired, or are some of them congenital? The pyeloureterogram may show distinctly that there is a temporary block at the ureteropelvic junction when shadow-casting solutions are introduced, but the surgeon may be disappointed when the ureters are explored without opening, to find that the lumen looks normal in size. One is quite surprised after an incision is made through this area to find within the lumen very definite obstruction.

When a kidney has been incapacitated because of obstruction for a long period of time, its function is taken over by its mate. When this has occurred, it is supposed that the relief from obstruction by surgical procedure will not bring back the function of the injured kidney. In certain instances when a plastic operation at the ureteropelvic junction fails, this is because enough of the function has been destroyed so that the kidney cannot recover sufficiently and the pelvis does not drain well, even with a very wide opening. Another point in technic that I wish to emphasize is thorough drainage of the kidney and its pelvis. After a plastic operation is done at the ureteropelvic junction, the best results in my experience are obtained when I have carried a tube well down into the ureter and out through a nephrostomy wound. This splinting of the operative area is very important. Put in a tube that does not fit too well, but still large enough to keep the ureteropelvic junction open, and drain the pelvis thoroughly so that it will not dilate and thus open the line of suture. I think this drainage through the line of incision and closure is more important than the careful closure. Unless you anchor the drainage tubes securely, which you put into the pelvis only, they will frequently come out. I think there are some cases that require partial resection of the overdilated pelvis at the time of operation.

Dr. Creevy has taken the operation described by Dr. Foley and Dr. Schwyzer and has used it well.

E. A. REGNIER, *Secretary*.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

A MEDICAL FORMULARY. Fourteenth Edition. E. Quin Thornton, M.D., Emeritus Professor of Therapeutics, Jefferson Medical College, Philadelphia. 363 pages. Price, \$2.75, flexible binding. Philadelphia: Lea & Febiger, 1937.

HEMOPHILIA, Clinical and Genetic Aspects. Carroll LaFleur Birch, M.D. Assistant Professor of Medicine. 151 pages. Illus. Price, \$2.00 paper bound, \$2.50 cloth bound. Urbana, Ill.: University of Illinois Press, 1937.

WHY WE DO IT. An elementary discussion of human conduct and related physiology. Edward C. Mason, M.D., Ph.D., F.A.C.P. Professor of Physiology, University of Oklahoma School of Medicine, Oklahoma City. 177 pages. Price, cloth, \$1.50. St. Louis: C. V. Mosby Co., 1937.

FAISCEAU ENERGETIQUE ET BIOLOGIE. Biogenese et Pathogenese. Docteur G. Froin, Ancien Interne des Hopitaux de Paris. 327 pages. Illus. Paper cover. Paris: Librairie Girardot et Cie, 1937.

SYNOPSIS OF ANO-RECTAL DISEASES. I.

Louis J. Hirschman. St. Louis, Mosby, 1937. \$3.50. 288 p. Illus.

This volume is prepared with the intention of aiding the medical student as well as the general practitioner in the diagnosis and treatment of the commoner diseases of the anus and rectum.

It is pithy, concisely worded and well illustrated. The author takes up the diagnosis and treatment of ano-rectal diseases in the usual fashion. He discusses anatomy, symptomatology, examination, anesthesia and the various diseases of the rectum in their order. There is a detailed chapter on anesthesia followed by an excellent chapter on the limitations of local anesthesia and office treatment.

The author emphatically insists on a thorough examination of the anus, rectum and sigmoid in the general examination of the patient and demonstrates the ease with which this can be done with a little practice.

This volume is to be highly recommended to the general practitioner because the author gives a detailed step-by-step outline of treatment accompanied by clear illustrations, and for the fact that practically all treatments given in the book can be accomplished in the office.

H. A. GREENBERG, M.D.

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Number 7

MEDICAL SERVICE FOR ALL AMERICANS*

N. B. VAN ETEN, M.D.

New York City

MEDICAL service for all Americans, at a price within their income ability; medical service for all, regardless of fee; medical service for all provided by the government in a manner similar to the provision of education in the Public School System; medical service for all employed people provided by compulsory pay roll deduction and employer contribution; medical service for all unemployed people provided by taxation; medical service for the upper 10 per cent of our people who have money enough to pay for all of the service they desire; medical service at moderate rates for middle class people; medical service on the installment plan; medical service budgets provided by industrial insurance; medical service for old age pensioners; medical service for the economic indigents who may be defined as those who are unable to supply themselves with the necessities of life; medical service for the medical indigents who may be defined as those who can not pay for medical care without sacrificing the necessities of life for themselves or their families; socialized medicine; State medicine; preventive medicine and the private practice of medicine, all these proposals are widely discussed by physicians today.

The great American pastime of research goes merrily along its costly way. Reports upon reports are piling up monumental testimonials to the memory of industrious fact finders.

The American Foundation for studies in government and the Hospital Survey of the City of New York have just made their final reports to bring us up to date upon adequacy and quality and distribution of medical care by the medical

profession and by the hospitals.

The Foundation features testimony gleaned from a cross section of 2,000 physicians who wrote independently their personal opinions. These letters are most stimulating and reveal considerable dissatisfaction with things as they are and with the prospect of things as they are to be. They compel honest consideration and are immensely valuable as demands for action.

The report of the survey committee is an important statistical revelation of the critical position in which the great hospital system of the metropolitan district finds itself. The necessity for the municipal as well as for the voluntary hospital is convincingly shown. The financial support of hospitals springs from three sources: from philanthropy, from fees from patients, and from taxation. Three troubled waters—philanthropy drying up, patients less able to pay and general tax burdens absorbing more and more of the financial resources of our contributing citizens. There is much disagreement among doctors and welfare workers as to plans for solution of the problems of medical service. The investigative committees which have been hard at work during the last ten years have served as useful provocatives in arousing complacent physicians to a realization of the importance of forward movement and contributing to this awakening has been a very real pinching of personal pocketbooks.

Some laymen would like to buy medical care at a department store, at bargain prices marked down for quantity and discounts for cash. They would like a completely mechanized service for all. They talk very fluently about the distribution of medical care. This may be easy to do

*Read before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 4, 1937.

when their thinking is impersonal. Academic discussion of sickness is not at all painful. One wonders about the color of their thought in the presence of personal suffering. It is quite possible that they would not be content with any panel doctor or any project doctor or just any doctor assigned by government authority. A real honest attack of appendicitis might be quite devastating to the equanimity of the welfare enthusiast who talks so glibly about surgical service for the rest of us. Abstract illness is very different from concrete illness—when the concrete has a personal location.

We live in a competitive society—man against man. Ever since the early biblical story of Cain and Abel, fratricide appears as one of the major activities of successive civilizations. Witness Spain, Ethiopia and the Orient, class conflict in the United States, conspiracy, racketeering, assassination, revolution, mass outlawry escaping civil control, democracy and personal liberty doomed. Throughout the centuries the physician has maintained the status of a non-combatant, saving the lives of friend and foe, conquering plagues and pestilence, preventing disease by scientific methods which had no national frontier, salvaging the unfit and restoring the crippled.

The physician has developed a protective coloring which exempts him from animosity. He who wears the red cross may go anywhere. He is a highly idealized servant of the sick. Age-long sacrifices have won him general esteem. His education qualifies him for social distinction but because he chooses to serve rather than to command he is not considered politically significant.

In Europe under Bismarck and Lloyd George he became the pawn of political machines. His services were regimented against his feeble protests. He is no longer an independent agent. Instead of serving the sick he serves a bureaucracy.

In the United States the doctor is still respected by most people. Most people prefer a personally selected physician. Most people prefer the kind of medical attention they are able to get from a family physician. Most people shrink from the publication of personal infirmity. Most people still cherish the thought of a dependable confidant. A few people are hospital minded and think first of the character of an institution

and what it can offer, with small interest in its personnel.

Very few people question the character of medical care. Most of the criticism of the quality of medical service comes from the physician and is quite in line with scientific thought, which constantly pursues new problems of cure and prevention.

Individual responsibility is so lightly carried by most of us that few of us are dependable. Here and there one takes his job seriously and willingly and upon his back we pile our burdens. Sometimes we thank him, give him a dinner, a set of resolutions and a watch, or a memorial plaque. When he breaks down with age or if his work does not materialize as we like, we push him out with scant courtesy, forgetting that we have failed to carry our end of the load. It cannot be denied that modern refinements have brought decadence with them. When the pioneers from the East came to Minnesota they followed the watercourses and climbed the divides mostly on their own feet. Every man, woman and child carried a burden according to their strength and there was built into their character a sense of conquering obstacles through the faithful discharge of individual responsibility.

Comfortable living tends to develop laziness and selfishness and indifference to common problems. We let George do it—let the officers of our organization carry our common obligations—particularly the secretary. In medical groups it is my observation that county societies or State societies are as good as the secretary and no better. He sits at the cross roads and hears all the voices. If he is inattentive or lazy the society degenerates; if he is alert and intelligent he tries to whip the workers into activity and his society grows strong and effective. If we shall slump into government-directed mass medicine, it will be very largely due to the fact that so many doctors fail to live up to their personal obligations. The medical profession will never be content with merely mechanically playing the notes in a symphony of service. Too much concentrated experience has gone into the making of a doctor to leave him cold and unresponsive or unsympathetic to personal suffering or unable to enlarge his emotion to comprehend broader social problems.

Defective nutrition produces rickets; defective understanding of the source and supply of valuable ideals produces low moral tone and spinelessness that easily bends under material pressure. Those who urge the importance of a selective draft for those who are to enlist in medicine have a long and exalted vision for the medicine of the future and it may well be hoped that the influence of their opinion will prevail. The personal character of the doctor cannot be too strong. The doctor must be above suspicion. The young doctor might well take Mark Twain's advice: "Always do right—it will please some people and astonish the rest."

While loosening the chains of tradition which may hamper the doctor in his efforts to understand and to adjust himself to a changing society, it is to be hoped that he will be a competent force to lift a sick society to higher levels of health and usefulness and that he will compel the respect of his contemporaries by his exemplary civic conduct.

There are those who advocate a better educated profession—these are chiefly doctors who are more concerned with the quality than with the quantity of medical care. Of course it is better than it used to be and is improving, but there are still incompetents in the ranks of medicine even among those who are highly educated. The fault lies in fundamental character weakness partly, and partly in a failure of some schools to teach clinical medicine. Many think that several schools should be closed and that all schools should be rated severely and uniformly. Money should be spent on equipment and endowment of chairs rather than upon buildings. Many advocate tax funds for medical schools sufficient to relieve the necessity for balancing budgets by enrolling a large number of students. Many advocate small student bodies for intensive education and believe that this can only be accomplished by state subsidy because it has become self-evident that private endowments are not dependable and student fees may involve an obligation to give a diploma to the incompetent because he has paid for it. It is feared that heavily endowed schools lean toward the development of research workers instead of clinicians. The costs of medical care, per se, are never high enough to furnish the medical profession with luxurious living. The margin

above bare existence has always been small. The costs of medical care involve merely a modest living for the doctor. The use of some forms of therapy and the employment of expensive diagnostic instruments and laboratory studies have raised costs above those formerly known to be desirable. Some of the increased cost is not generally essential.

Simple hospital charges are not ordinarily prohibitive. The average hospital stay of nine days is not of itself ruinous to the average family. But the desire of the patient or his family for hospital frills, the private room, the private bath, the special nursing, unnecessary consultations, the floral decorations, pile up staggering bills that swamp the family.

Medical care for all the people must first be thought of in the simplest formulae of things as they are in our present economic situation. We must not be confused by the mirage of uncertain prosperity.

Medical care for all the people presents a problem far greater than direct service to the sick, which is but one detail of the economics of physical and moral sustenance.

The fact that medical care in the United States is the best in the world does not imply that it adequately serves all of our people. There are those who have no medical care. There are sections of our country where people die because they have no doctors available. There are people in our country who make no effort to seek medical care even when it is available. Is there economic adequacy to fill all the demands for medical care? Can all of our people be forced to accept medical care when it is available? Can we force Wassermanns upon every one of our citizens in an effort to eradicate syphilis? Can we force all of the known syphilitics to take adequate treatment? We fail to enforce vaccination in this country with the resultant of 40,000 cases of smallpox annually. Have we succeeded in convincing our people of the need for immunization against diphtheria? Have we sufficiently educated our people concerning the communicability of tuberculosis? Can we teach the people to consult physicians instead of quacks and patent medicine vendors when they are sick? Can we teach the people to seek a physician for a diagnosis before attempting self medication? Can we teach the poor that medical

care is generally available? Can we teach anybody to budget for prevention? Do we know many people who budget for anything beyond rent, heat and light? The medical profession is willing to give medical care; are the people willing to receive it?

In New York the Governor is asking the legislature to contribute \$400,000 to assist in a campaign against pneumonia now being carried on by the State Medical Society and the State Department of Health. Can this worthy program be adopted by all the states? The conditions in New York or Illinois or Minnesota are very different from those in Arizona or New Mexico or Mississippi, yet there are pressure groups which are trying to influence the national administration to adopt nationwide programs of compulsory sickness insurance regardless of the fact that the states which pay the heaviest taxes and supply help to weaker commonwealths very naturally desire a pro rata share of taxes to be used in their own states.

Housing in Arizona, New Mexico and Mississippi is inadequate for the comfort and health of the people in those states. Morbidity and mortality statistics would undoubtedly be improved if all the people in those states were healthfully domiciled.

In every great city there are slum areas which are breeding spots for disease. Is there adequate interest in clearing them out in order to improve community health? In the City of New York there are 250,000 bedrooms which have no direct communication to the outer air. Many of these rooms have multiple occupancy. Is there sufficient public interest to improve the health of the community by insisting upon elimination of these pestilential holes? We live in a competitive society. If the doctor is to be effective in his struggle to improve the health of our people, his own position as an intelligent leader of public opinion, he must divest himself of timidity and servility and put on the armor of confidence in his own ability and must militantly organize for what is evidently a battle against special privilege, against bureaucratic quackery and unscrupulous political pressure.

Exploitation of the public by charlatans, away back in the era of Babylonian culture 4,000 years ago, was one of the earliest influences which resulted in the organization of physicians, and

down through the centuries protection of the public from quacks and protection of the public health from the ravages of epidemic pestilence was the rallying motive for organization. Many codes were written under which organized medicine rose and fell with the rise and destruction of dominant civilizations, but the cohesive influences of self preservation and traditional altruism have preserved the continuity and vitality of the thread of medical organization until this day.

One of the earliest codes which has strongly influenced the conduct of the medical profession is found in the quaint language of the Oath of Hippocrates and is the basis of our medical ethics of today. The endurance of this code is probably due to its sincerely altruistic character. It has operated to hold the practitioners of medicine together through twenty centuries. Additional qualifications for the ethical practice of medicine have been codified from time to time, and especially during the last century, but the inspiration of the old affirmation runs through them all. The amazing development and expansion of industrial interest have so changed social relationships that problems which were simple as late as fifty years ago have become so complex and new economic principles have become so necessary that it is obvious that any discussion of ethics must involve a discussion of economics. Scientifically medicine is glorious, economically it is improvident. Living in an industrial age, the medical profession has made very little effort to learn from industry practical methods for spreading the knowledge of its potentialities. Hiding its light under obscurant ethics, because of *fear* of commercializing individual abilities it screens from publicity much knowledge of great popular value.

Membership in a profession seems to have caused the physician to forget that everything moves to the tempo of industry. We struggle for employment or fall into the mass of those who cannot maintain the pace of modern rhythm. From birth to death we all live by the clock. The physician rates no exception. The compelling pulse of progress beats also for him. If modern society rates him successful he must step faster and sleep less than others. He cannot be content with being on time, he must be ahead of time. The doctor of medicine is accused of

being socially uncoöperative and out of step. The doctor of philosophy is now trying to prescribe. Will the American people take his medicine? The bottle is labeled socialized medicine or state medicine. The directions are take it and like it. Socialism is defined as a theory of civil policy that aims at the public collective management of all industries. Socialized medicine would be the public collective operation of the practice of medicine. State medicine is the operation of the functions or powers collectively of a state or nation in the control of the practice of medicine. These forms of collectives are claimed by their advocates to promise sure cures for all of the economic troubles of the physician. The struggle between collectivism and individualism is world-wide. It cannot be denied that conservative doctors, indifferent doctors, lazy doctors, unethical doctors are socially uncoöperative. The conservative doctor resents the suggestion of any deviation from the traditions of medicine. He has nothing to offer but his satisfaction with things as they are. The indifferent doctor does not care enough to attend the meetings of his county medical society. He thinks that the evolutions of laissez faire will take care of things and that there is nothing he can do about it anyway. The lazy doctor, who is largely responsible because he is so socially uncoöperative that he has taken no interest in the fact that lay organizations have taken away from the doctor the administration of several fields of medical service, notably that of tuberculosis and mental hygiene. And the unethical doctors who try to justify themselves by asserting that everybody is crooked; all merchants of health; all fee splitters. They claim that medical ethics are mere academes to cover criminality, abortions, fraud and deceit. They would reduce everybody to their own depths of intellectual degradation and dishonesty. The exigencies of the times demand the full coöperation of every licensed practitioner of medicine.

Medical organizations have been too conservative. In order to avoid mistakes all of the units of organized medicine must work together not only to resist the imposition of regimentive bureaucracies upon the medical profession, but to evolve plans which will satisfy the demands of society without sacrificing the dignity inherent in the delivery of service of high quality. The

American physician is entitled to an opportunity to advise and propose legislation concerned with the health of the American people. Change comes to the physician and he will welcome it. Social conditions change the manners and the conduct of all professions. The medical profession asks that its educational qualifications be taken into account in the development of new plans for medical service. Private practice has such public consequence that government umpiring is necessary, but a prospect of government competition is appalling.

All of modern medicine has been developed within the last fifty years, and the progress of the science of medicine has been so absorbing that the art and application of medicine has lagged far behind and shows few signs of reaching its proper proportionate position unless or until a new type of physician shall have been developed. The physician feels the pressure of public health education and the reaction of his own work in preventive medicine which has eliminated diseases which formerly absorbed much of his effort. The physician has coöperated with the government agencies in the attempt to eliminate communicable diseases and the absence of destructive epidemics has been of great economic value to the nation. Unpredictable catastrophes have always been cared for by health departments, or by the emergency organizations supported by generous people and by the free services of physicians with the hearty concurrence of the whole profession. The quality of medical care has been so remarkable that students generally concur in the opinion that nowhere are the citizens of any country better served. The fact that all morbidity and mortality statistics show general decline except those relating to senescences and casualty, materially changes the health picture of the nation and confronts the physician with radically different medical and social problems to which he will be compelled to adjust himself individually and collectively.

From the time of the organization of the American Medical Association, the principles of medical ethics have been in process of development, being amplified and amended from time to time by the House of Delegates on the recommendation of the Judicial Council. These principles have become the accepted code for American Medicine and are strictly adhered to by all honorable physicians.

Three years ago at the Cleveland meeting of the Medical Association the position of the Association was further defined in an affirmation popularly known as the "ten points":

1. All features of medical service in any method of medical practice should be under the control of the medical profession. No other body or individual is legally or educationally equipped to exercise such control.

2. No third party must be permitted to come between the patient and his physician in any medical relation. All responsibility for the character of medical service must be borne by the profession.

3. Patients must have absolute freedom to choose a legally qualified doctor of medicine who will serve them from among all those qualified to practice and who are willing to give service.

4. The method of giving the service must retain a permanent, confidential relation between the patient and a "family physician." This relation must be the fundamental and dominating feature of any system.

5. All medical phases of all institutions involved in the medical service should be under professional control, it being understood that hospital service and medical service be considered separately. These institutions are but expansions of the equipment of the physician. He is the only one whom the laws of all nations recognize as competent to use them in the delivery of service. The medical profession alone can determine the adequacy and character of such institutions. Their value depends on their operation according to medical standards.

6. In whatsoever way the cost of medical service may be distributed, it should be paid for by the patient in accordance with his income status and in a manner that is mutually satisfactory.

7. Medical service must have no connection with any cash benefits.

8. Any form of medical service should include within its scope all legally qualified doctors of medicine of the locality covered by its operation who wish to give service under the conditions established.

9. Systems for the relief of low income classes should be limited strictly to those below the "comfort level" standard of incomes.

10. There should be no restrictions on treat-

ment or prescribing not formulated and enforced by the organized medical profession.

This declaration of principles constitutes the present platform of organized medicine. It is a description of fundamental bases from which the medical profession may advance to meet new social currents and lead them toward constructive solutions of the problems of medical care.

In many state medical and county medical societies during the past three years, standing upon the platform of the ten points just quoted many plans have been discussed for providing new methods of medical service having in mind benefits to the sick as well as to the physicians who serve them. None of these plans have had more than local value, but they reflect the anxiety of the medical profession to assume progressive leadership.

On January 9, the Trustees of the American Medical Association formulated a new statement designed to meet new conditions affecting medical practice which will grow out of the new Social Security law. The objectives are to coordinate all of the governmental bureaus now concerned in matters concerning the health of the American people into one department and to clarify our policy concerning the care of the medical indigent.

The following statement of the Trustees was adopted without a dissenting voice:

Reorganization of Government Medical Activities

Recognizing that committees of the Senate, and of the House of Representatives of the United States Government, and a special committee appointed by the President are at this time concerning themselves with the reorganization of government activities with a view to greater efficiency and economy, and recognizing also that the President, in his opening message to the Congress, indicated that he would shortly present to the Congress recommendations for such reorganizations of government activities in the executive branches, and recognizing moreover the great desirability that all activities of the Federal Government having to do with the promotion of health and the prevention of disease might with advantage be consolidated in one department and under one head, the Board of Trustees of the American Medical Association recommends that such health activities as now exist be consolidated in a single department which should not, however, be subservient to any other charitable, conservatory, or any other governmental interest. It has been repeatedly said that public health is the first problem of the State. It is the opinion of the Board of Trustees that health activities of the government, except those concerned with the military establishments, should not

be subservient to any other departmental interests. This reorganization and consolidation of medical departments need not, under present circumstances, involve any expansion or extension of governmental health activities but should serve actually to consolidate and thus to eliminate such duplications as exist.

It is also the view of the Board of Trustees that the supervision and direction of such medical or health department should be in the hands of a competently trained physician experienced in executive administration.

* * *

Extension of Medical Service to the Indigent

The advances of medical science and the increasing ability of scientific medicine to serve the public in health and disease have created new problems of medical service and medical costs.

In the past, the medical profession has always been willing to give of its utmost for the care of those unable to pay. The available evidence indicates that today throughout the United States the indigent are being given a high quality of medical care and medical service. Nevertheless the advances of medical science have created situations in which a group of the population neither wholly indigent nor fully competent financially find themselves under some circumstances unable to meet the costs of unusual medical procedures. The Board of Trustees of the American Medical Association points out the willingness of the medical profession to do its utmost today, as in the past, to provide adequate medical service for all of these unable to pay either in whole or in part. Members of the medical profession locally and in the various states are ready and willing to cooperate with other agencies in ways and means for meeting the problem of providing medical service and diagnostic laboratory facilities for all requiring such service and not able to meet the full cost thereof. These are financial and administrative problems of local and state administration primarily rather than problems of federal responsibility. The willingness of the medical profession to adjust its services so as to provide adequate medical care for all the people does not constitute

in any sense of the word an endorsement of health insurance either voluntary or compulsory as a means of meeting the situation.

On January 12, in a message to the Congress, the President proposes to reorganize the function of the government departments and creating two new cabinet positions, a Secretary of Social Welfare and a Secretary of Public Works. The department of Social Welfare is created "to advise on social welfare, *administer health*, educational and security activities; protect consumers, administer relief grants, conduct Federal aspects of the security program (pensions, etc.), administer Federal charitable, corrective and penal institutions and parole and probation laws." If this meets the approval of the congress, medicine will be placed under the direction and control of welfare workers and will be a direct denial of the desires of organized medicine. The physician of the future will be deeply concerned in this new alignment. The matter is brought to your attention today because I believe that your vital necessity demands that you become militantly active at the earliest possible moment.

Medical care for all Americans is a magnificent challenge. The most effective way to approach it seems to me to lie through education. Education of the doctor himself concerning all the social problems concerned in the public health—education in the literal and technical execution of known methods of treatment—education of those who represent the public in legislative or administrative capacities and continuous education of all the people in the elemental functions of disease prevention.

SUGGESTED METHODS OF IMPROVING THE HEALTH OF THE AMERICAN PEOPLE*

The Program of the Children's Bureau

MARTHA M. ELIOT, M.D.

Assistant Chief of the Children's Bureau, Department of Labor
Washington, D. C.

MY part in tonight's program is to bring to you how one relatively small bureau in the Federal Government, charged with the large responsibility of the interests of children, is viewing this problem of health and medical care. As you know, the Children's Bureau was created by an Act of Congress twenty-five years ago and instructed to investigate and report upon all phases of child life among all classes of the people. The problems of infant mortality and causes of disease and illness among children were specifically mentioned in the act. From its inception, the Bureau has followed this mandate, has studied conditions underlying infant and maternal mortality and has reported upon the economic, social and medical factors underlying the high mortality rates and certain types of illness or deficient nutrition among children.

If any one fact has emerged from these studies that is of more significance than others to the welfare of children, it is that an adequate standard of living for the family is basic to all other factors. Such a standard of living to be adequate must include, in addition to food, shelter and clothing, provision for medical care and for health supervision. Without such provision, a vicious circle is established, for inadequate medical care and lack of preventive health services increase the economic burden while poverty itself is responsible for much undernutrition and in large measure for insufficient and inadequate treatment of sickness. To raise the standard of living for families to a level at which each family can provide for itself the necessities of life, including medical care, and at which children may grow and develop properly, should undoubtedly be the ultimate goal. Naturally, public effort has been directed first toward provision of food, shelter and clothing for those unable to provide these rudiments of life, while provision for medical care, for prevention of disease, has been largely thought of as an

extra to be supplied only when absolutely necessary, when sickness has actually occurred and public opinion demands that care be given. Voluntary help through privately supported institutions, through the free service given by thousands of physicians, has been relied upon as one of the main sources of care. State and local governments for many years have contributed to certain phases of the problem, such as care of the insane, the tuberculous, the chronically ill and aged, and to some extent the acutely ill, including maternity care. Federal, State and local governments have provided certain limited resources for the control of communicable disease and for general sanitary measures; in still more limited fashion has government provided for health education and supervision of the health of the family.

During the past decade it has become increasingly apparent that if adequate provision for health supervision and medical care is to be made for families of low income, government must contribute to the program. Admittedly there is a widespread need for more adequate health facilities, and in many areas of the country and among special groups in the population a need for more extensive provision of medical care.

For that large and important part of the population that comes under the purview of the Children's Bureau, the mothers and children, the need for increased resources and facilities for medical care, especially in rural areas and in the small cities, cannot be gainsaid. To be sure, the drop in the infant mortality rate for the first year of life has been striking during the past quarter century, but if we examine the data more closely we find that the death rate of infants under one month of age has declined but little during this time, and the rate under one week almost none at all. In 1934, 73 thousand infants died under one month of age, 57 thousand of them under one week; and 78 thousand stillbirths were reported. Moreover, the

*Read before the Congress of Allied Professions in conjunction with the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 3, 1937.

maternal mortality rate that was high in 1915 when the birth registration area was established, sixty-two for each 10,000 live births, is still almost as high today. In 1935, a total of 12,544 women died in the United States from causes attributed directly to pregnancy and childbirth, or fifty-eight for every 10,000 live births. Approximately one quarter as many again died from other conditions associated with pregnancy, such as tuberculosis, chronic nephritis or heart disease. The economic waste and the human tragedy that these 15,000 or more deaths represent shocks us anew each year as the death rates are given out. Furthermore, we know that at least half and probably more than half of these deaths of mothers are preventable, and yet, as a people, we do not take the steps necessary to provide the proper care that would save thousands of lives of mothers annually and an even greater number of newborn infants.

The past two decades have witnessed a widespread dissemination of knowledge regarding standards of prenatal care and infant care, but of what value is such knowledge if we do not provide resources to make such care available for all women who cannot provide it for themselves. Recent reports of activities from a considerable number of the full-time county health units indicate that even in these best equipped areas prenatal nursing supervision is still most inadequate. In only a few of these rural communities is prenatal nursing supervision reasonably widespread. What should concern us still more, however, is that so comparatively little has been done outside the larger cities to make available the resources that are necessary to provide adequate care for these mothers at time of delivery, either care in the home by qualified local physicians assisted by nurses, or care in the hospitals when necessary. Little has been done to provide obstetric and pediatric consultation service to assist the general practitioner in the rural or semi-rural areas. If women's lives are to be saved, the basis for assistance must be their need of adequate medical care as well as their economic need.

For children, too, facilities and resources for providing necessary corrections of handicapping defects and medical care in illness are often lacking, more often in the smaller cities and towns, or in rural areas where there are no

public or voluntary hospitals and clinics, or where funds do not exist or are inadequate to pay for care. One of the most serious difficulties with which the public health official and the public health nurse are faced today is this lack of resources to provide the medical and dental care needed to correct obvious handicapping defects in children. Local physicians are repeatedly giving their services for the most urgent cases, but there is a limit to what a public health nurse can ask of a willing doctor and to what a willing doctor can give. In some cases, groups of citizens raise funds to meet hospital costs for a certain number of cases, public funds provide the means to care for others. But who can talk long with a public health nurse whose work is in the rural areas and not hear of many medical needs among mothers and children that are not being met, both those that are really preventive in character and those that are strictly curative? To supply the needs of undernourished children is of major importance in their growth and development, but the efforts of both doctor and nurse may utterly fail because there is neither money for the necessary food nor for the necessary medical and dental care. Quite justifiable is the skepticism with which many nurses and physicians come to view routine examinations where there can be little or no follow-up medical or hospital or dental care for those unable to pay for it.

What is the answer to all this? At the present time there is probably no one answer that will solve the problem of medical care for all who cannot provide it for themselves. The recent report entitled *American Medicine*, published by the American Foundation, gives a wide range of solutions suggested by medical men and women of greatly diversified interests. One contributor who viewed the problems of his state with the gravest concern suggests that "the first step, surely, is to define 'adequate medical care,' and the next step is to employ cost accountants to estimate its cost." We have no accurate figures as to the number of children in the United States who do not receive necessary care either for economic reasons or because they live in regions where skilled care is inaccessible, but there are many indications that the number is very large. We have no accurate figures as to how many women in the United States have no medi-

cal attendant at delivery or how many have insufficient care. We do know that several thousand die each year and many thousand more are physically handicapped for lack of proper care, and that for hundreds of thousands nursing care at delivery is not available.

This afternoon Miss Beckey spoke of the needs of families with incomes under \$2,000 and commented on their ability to pay for medical care. Let us look at another group in our population. It has recently been estimated that in families living in rural areas and in the smaller cities whose total annual income, including home produce, is less than \$500, somewhere between 350,000 and 400,000 births occur annually. If we raise this income level somewhat and consider families with total incomes of \$750 annually, we find that there would be included more than half a million births or over one quarter of the total for the country. Should we raise the income level to \$1,250, nearly one-half of all births would be included. No one would question, I believe, the inability of a family living at these low income levels to pay for all the costs of adequate maternity care. And yet these rural mothers and their newborn infants need the care quite as much as do those in the large cities who can go to clinics and hospitals.

With the passage of the Social Security Act there came into existence through part 1 of title V, a program of maternal and child health which up to the present time has been limited almost entirely to the preventive and health educational aspects of the maternal care and child health program and to the development of sound state and local administrative organizations on which an expanding program could be built. In general, the state plans have developed the principle of local responsibility for maternal and child health work, placing the programs under the county or district health departments. The assistance and coöperation of local practicing physicians have been sought and in an increasing number of communities these local physicians have been paid in some measure for the time they give to the prenatal or child health work. The amount of money available to the several states has not been adequate, however, to include payment to physicians for delivery care and such payments have not yet been made under any plan. In a few rural areas nurses are

being provided to assist physicians at delivery, a service that is of greatest importance if adequate care is to be given, but one that is obviously costly and difficult to organize. Under present plans, funds have not been sufficient to provide payment to physicians for correction of physical defects in children or to dentists for more than dental prophylaxis. A large number of states (38) have set aside funds to provide postgraduate courses in obstetrics and pediatrics for physicians practicing in the smaller cities and towns and in the rural areas. The interest that has been shown and the universal approval that has been given bodes well for the development of postgraduate opportunities in these two specialties and higher standards of work in the future.

Under this part of the act, then, services up to the present time have been preventive and educational.

Under part 2 of title V of the Social Security Act, however, there came into existence a program that was admittedly one of medical care to be developed through grants in aid from the Federal Government to the responsible state agency. I refer, of course, to the program for crippled children. The act specifically requires that the plans submitted by the states to the Children's Bureau for approval shall include provision for locating crippled children, and for providing medical, surgical, corrective, and other services and care, and facilities for diagnosis, hospitalization, and after-care, for children who are crippled or who are suffering from conditions which lead to crippling.

Forty-two States, Alaska and Hawaii are actively coöperating under this part of the act. A plan has been approved for the District of Columbia but is not yet in operation. Of the six remaining states, five have recently designated the agency that will be responsible for administration and plans for actual coöperation are being formulated. In view of the fact that, prior to the passage of the Social Security Act, only ten states had a well established plan along the lines set up by the Federal act, there would seem to be little if any doubt that on the whole the states have welcomed the assistance and promptly sought ways and means of putting it in operation.

On the face of it, this program for crippled

children is an appealing one, one in which the cost of medical care is high, too high for the average family to bear, one in which the treatment in a majority of cases brings about marked improvement, if not cure, and puts the child on the road to becoming a self-sustaining citizen. The program is entirely one of medical care, either curative treatment of the child who is already crippled or preventive care of the child who is suffering from a disease that may lead to crippling, as, for instance, poliomyelitis or acute rheumatic fever. The act requires that the plans provide for care after hospitalization. This is interpreted as including not only medical or surgical after-care, but adequate social services to insure as satisfactory social adjustment of the child in his home as may be possible or the necessary adaptation of his environment to meet his needs even to the extent of finding temporary foster home care when necessary. Plans for coöperation with the state agency charged with vocational rehabilitation are insured by the requirements of the Federal act.

From the time when this part of the Social Security Act was first under consideration, the precedent-setting character of the program has been appreciated and during the fifteen months of its operation certain policies have been formulated with a view first to giving the best possible care to the child through the provision of adequate and continuous service, and second to establishing satisfactory principles for the expenditure of public funds by governmental agencies. To insure adequate service the State agencies have been setting up standards for the qualifications and selection of personnel, for hospital facilities and equipment, for convalescent care. The state agencies have in many cases surveyed their medical and surgical and hospital resources from a geographical point of view so as to bring the service required as close to the child's home as was possible, always considering first the adequacy of the service to be rendered. As a result, a variety of plans for centralization or for decentralization of service has been evolved by different states. In all states having approved plans, careful consideration has been given to the qualifications of those in administrative control, of the full-time field staff—nurses, social workers, physical therapists—of the surgeons who

render orthopedic or plastic surgical care, of the pediatricians, neurologists and other medical men who provide consultative service, of the technical staffs of hospitals and convalescent homes, and of the local field workers. Recommendations with regard to qualifications of personnel that have been made by national professional organizations and standards for certification by the various medical boards are being recognized and used by the responsible state agencies to set their standards for selection of personnel. The recommendation by the Conference of State and Territorial Health Officers that the program for crippled children should be under medical direction is resulting in an increased number of appointments of physicians to positions of leadership. The requirement of the Social Security Act itself that a state plan to be approved must show evidence of coöperation with medical, health, nursing, and welfare groups and organizations has meant that medical men as well as other professional groups, are in all cases being consulted in the working out of the program. Technical advisory committees of orthopedic surgeons, pediatricians, and other medical men have been appointed in thirty states and in most cases are being actively used in a consultative capacity. Surgical and medical fees, hospital rates and costs are being reviewed in many states and by the Children's Bureau to arrive at an equitable and fair basis for payment which considers on the one hand the amount of time required, the responsibility involved, and the technical skill demanded of physicians and surgeons and on the other hand the limited public funds available for paying for all types of service.

Policies of administration that have to do with state-wide provision of facilities for case finding, diagnosis, hospitalization, medical and surgical care, convalescent care and medical and social after-care have been and are being evolved slowly and the experience of the better organized states is made available to those with newly organized programs through the field consultants from the Children's Bureau.

During this first period of formulation of plans and actual organization of activities a great deal has been accomplished toward keeping standards of care high without laying down a body of rules and regulations. Certain policies

have emerged which as they prove valuable and generally applicable will be established as precedents to be followed until better ones are established by experience. The policy of administration of public funds by public agencies has long been accepted as sound. From the beginning the Children's Bureau has followed this policy. That the public agencies need the active support of professional organizations and citizens' groups has also been recognized by the Children's Bureau as of primary importance in establishing and maintaining standards of performance.

One of the conditions of approval by the Children's Bureau laid down in the Federal Act is that the plan shall show evidence that there will be efficient operation of the program. To assist it in developing policies as to what is involved in efficient operation, the Children's Bureau has invited leading orthopedists, pediatricians, public health nurses, medical social workers, physical therapists, and others to meet as an advisory committee. Already their recommendations with respect to certain minimum standards of procedure have influenced and given support to the nation-wide program that is immeasurable. Many problems, however, yet remain to be solved, both technical and administrative, but we believe they can and will be taken care of as the work proceeds.

At the recent meetings in Washington of the General Advisory Committee on services under the Social Security Act, strong recommendations were made to the Children's Bureau by the special committee on maternal and child health that the work under part 1 of title V be increased and that funds be made available, especially in rural areas, for more adequate maternity care and care of the newborn. The recommendations included these types of care: (1) That given locally by qualified general practitioners and nurses in the home at time of delivery, for all women unable to provide such care for themselves either for economic reasons or because of inaccessibility of adequate care; (2) obstetric and pediatric consultation service where such is not available; and (3) hospitalization for women in need of it either for medical or for economic or social reasons. The committee further endorsed the program of postgraduate education now being developed, and recommended the establishment of centers of postgraduate training for physicians

and nurses in obstetrics and care of the newborn, a need that was thought to be very urgent. Finally the committee recognized the right of the patient to select her own physician and the necessity and desirability of coöperation with the national, state and local medical organizations in the working out of any plan.

If increased resources ever make such an expansion of program possible, the experience gained in developing the crippled children's program would form a basis for policies to be laid down in working out such a maternal care program. Problems such as qualifications of personnel might be more difficult to solve since the greatest proportion of all maternity care is given not by specialists, as in the case of orthopedists caring for certain types of crippled children, but by the general practitioners. The need for providing obstetric and pediatric consultant services in rural areas would be a problem unlike any presented in the crippled children's program and yet one of utmost importance in a maternity service. On the other hand, certain of the policies with respect to hospitalization might well be as applicable to maternal care as to care of crippled children.

Should such an expansion of the work under the maternal and child health sections of the Social Security Act as recommended by the Bureau's Advisory Committee come about, it would be welcomed not only by the Children's Bureau, but by the state health officers, for the need of assistance in the maternal care field is probably seen more clearly and known to be most urgent by that group. At their recent conference in Washington the state health officers adopted a report of their committee on maternal and child health and went on record as urging the extension of this program. Their recommendation followed similar lines to those of the advisory committee with respect to increased resources for maternity care and care of the newborn, but stressed the need for improved training in obstetrics in the undergraduate curricula of medical schools as well as in postgraduate education. I have gone at some length into the plans and policies that have been developed in administering the crippled children's program because it can be regarded as an example of how one category of medical care operating under a state agency on a state-wide basis with

the assistance of grants in aid from the Federal Government can be handled to the apparent satisfaction of most of those concerned. It is our belief that there are certain other categories of medical care that by the very nature of the need must be universal in their operation for those in the population who are unable to provide the care for themselves either for economic reasons or because of inaccessibility of adequate care. Maternity care is one. Sooner or later, through public funds, government must increase aid now given for this type of care for women, especially women in rural areas who live out of reach of specialists and hospitals or even out of easy reach of general practitioners. Already a beginning has been made through some relief or

welfare departments, but that further development should be under the auspices of the state health departments in conjunction with the present preventive maternal care programs seems essential. Medical direction and leadership and fair compensation for services rendered, an understanding of the economic and social problems involved, and coöperative planning with welfare and relief agencies are of utmost importance if the care is to be adequate and standards of service high.

By proceeding forward step by step in this very complex problem of medical care the ground will be laid most soundly for the accomplishment of our ultimate goal of good medical care for all the American people.

ANTENATAL TREATMENT OF PRENATAL SYPHILIS*

R. A. VONDERLEHR, Assistant Surgeon General
and

AUDREY G. MORGAN, Acting Assistant Surgeon

Washington, D. C.

IT is well known that control measures directed against the transmission of prenatal syphilis from the mother to the unborn child strike a more popular appeal than any other activity in the campaign against this disease. From a theoretical standpoint the prevention of this transmission should be easy. There are four crucial points in control: (1) an educational program teaching women the need of reporting for prenatal care as soon as pregnancy becomes known; (2) the institution of measures to insure co-ordination of the work of venereal disease control and prenatal hygiene units; (3) an attempt by interested agencies to gain the coöperation of all physicians who do obstetrical practice to take a blood specimen as soon as the patient presents herself; and (4) the development of proper facilities for the administration of adequate treatment to the infected woman during each pregnancy. From a practical standpoint, however, we know that health programs and medical activities have not as yet been so efficiently co-ordinated that transmission of syphilis from the mother to the unborn child is prevented to an

extent which approximates the possibilities existing through the application of present knowledge.

The Problem

The damage done by prenatal syphilis is incalculable. It is estimated that there are 25,000 fetal deaths from prenatal syphilis every year in the United States. While syphilis is not a direct cause of sterility in a large percentage of cases, it frequently causes childless marriages through death of the fetus. The mortality of children from prenatal syphilis after birth is very high among the children of syphilitic families. A study by Jeans and Cooke³ of 610 syphilitic infants showed a mortality of 26.6 per cent. In addition to the death of more than a fourth of these children, most of them are handicapped throughout life by various forms of disability. Probably few of them measure up absolutely to the standard of the normal human being and not more than a third are able to lead even approximately normal lives. The incidence of disease among them is higher than among the children of normal parents. A very high percentage suffer defective eyesight caused in the majority of cases by interstitial keratitis.

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Chorioretinitis and iritis occur infrequently. Fournier reports eye lesions in 78 per cent of syphilitic children, including interstitial keratitis in 52 per cent. Jeans and Cooke found keratitis in 63 per cent of children over five years of age with acute syphilis. Lennarson and Jeans⁴ report a group of 247 syphilitic children in 143 of whom special examinations of the eye were made. Syphilitic lesions of the eye were found in 38 per cent of the whole group and 66 per cent of those in whom special examinations of the eye were made. Cole² reviews a study made by the Coöperative Clinical Group of 1,010 cases of late prenatal syphilis kept under observation or treatment for two years or more. Approximately one-third of the patients had interstitial keratitis. He concludes that a patient with late prenatal syphilis is in constant danger of interstitial keratitis up to the age of twenty-five unless he is given adequate antisyphilitic treatment. The best preventive treatment for interstitial keratitis is the use of adequate continuous treatment for all latent prenatal syphilitic children. Thirty-six per cent of untreated prenatal syphilitic children develop interstitial keratitis as compared with 2 per cent of such patients who have received modern antisyphilitic treatment. The patient should not be allowed to go through the attack of interstitial keratitis without antisyphilitic treatment. It was found that six times as many untreated as treated patients lost useful vision from the disease.

Stokes⁶ reports neurosyphilis in 26 per cent of 202 prenatal cases examined, mental retardation in 25 per cent, nervousness in 22 per cent and deafness in 10 per cent.

Prevention Through Treatment

It is pitiable that thousands of children should be brought into the world with such a heavy burden of physical and mental disability, and incredible that this should be allowed to continue, since congenital syphilis is preventable. It has been said that to enjoy good health it is necessary to begin with one's grandfather. Certainly to prevent congenital syphilis a beginning must be made, as a rule, with the father. The greater part of familial infection is probably traceable to the premarital infection of the male parent. Fournier found that 75 per cent of his syphilitic women patients acquired the infection from their husbands. The Solomons⁸ estimate that 80 to 90 per cent of syphilitic husbands acquire their

syphilis before marriage, and Stokes' examination of a rural American clientele showed that over 90 per cent of exposure to syphilis in men occurs before marriage and this is the indirect source of prenatal infection.

One of the first steps in prevention is the development in adolescents of a sense of responsibility for the health of future generations. This may be accomplished by education.

Another step in the prevention of the prenatal transmission of syphilis, particularly important because it may be applied on a national basis at once, is the legal requirement of a certificate of freedom from venereal disease as a necessary condition for marriage. There is some form of legal enactment on this subject now in twenty-six states. Some, however, only require a statement from the contracting parties that they are free of disease. A medical certificate and a mandatory serologic test for syphilis should be required in all states. Such a law tends to cause both contracting parties to see to it that they are fit for marriage before undertaking the step. The necessary visit to the physician makes it possible for the latter to have a frank talk on the subject of venereal disease and its consequences with those contemplating matrimony.

The most effective method for the prevention of prenatal syphilis, the effectiveness of which has been proved beyond doubt, is the routine examination of pregnant women and their treatment if they are found to be infected.

A study of syphilis in pregnancy made by the five coöperating clinics¹ based on examination of 603 pregnant syphilitic women shows that where early and adequate antisyphilitic treatment is received, 91 per cent of the women give birth to normal apparently non-syphilitic children when the treatment is begun before the fifth month. This is in sharp contrast with the results in untreated cases, where only 17 per cent of the children are born healthy and 83 per cent are born dead or with congenital syphilis. Even when treatment cannot be started before the fifth month, healthy children will be born to 65 per cent of the women who receive any amount of treatment at any time during pregnancy. All of the findings of the Coöperative Clinical Group confirm the observations of McCord⁵ with regard to the possibilities of prenatal syphilis control.

Many physicians object to the use of routine Wassermann tests in all pregnant women. Some say that their patients belong to the upper classes and that they could not possibly have syphilis. Others, that there are so few syphilitic women among their clientele that it would not be fair to subject all of them to the annoyance of having the test made. And still others, that the average well-bred woman would be insulted at the suggestion of having a Wassermann test made.

It is true that the physician *rarely sees evidence* of syphilis in his pregnant patients *because it is latent* and only revealed by a blood test. Often the woman does not even know that she has had syphilis until the birth of a syphilitic child reveals the fact. There is abundant evidence to show that no class of the population is entirely free of syphilis and though it may not be so common among the cultured as among the ignorant, the saving of only a few children from syphilitic infection would more than justify all the time, trouble and expense of the routine examination. As a matter of fact, the very people among whom the disease is least prevalent would probably be the readiest to submit to examination for the common good. The present syphilis control campaign is making the prevention of this form of the disease so well understood that the cultured woman may often be expected in the future *to demand* a serologic blood test in pregnancy.

Because there are occasionally pregnant syphilitic women who do not show a positive Wassermann reaction, a very careful history should be taken, including an inquiry as to the appearance in the past of suspicious lesions in the woman or her husband, and of miscarriages or stillbirths. In short, the obstetrician should always be on the alert for any evidence of syphilis.

There need be no hesitancy in giving anti-syphilitic treatment to pregnant women as they tolerate it even better than nonpregnant women. Pregnancy in itself seems to a certain extent to act as treatment for syphilis as far as the woman is concerned.

Adequate chemotherapeutic treatment of syphilis during pregnancy consists of at least ten injections of an arsenical drug and ten injections of a heavy metal, begun before the fifth month and continued until the end of term. With such treatment, as has been noted, 91 per cent of the children were born normal and ap-

parently free of disease, according to the studies of the Coöperative Clinical Group. With adequate amounts of arsphenamine and less than ten doses of heavy metal, 85 per cent of the children were healthy when treatment was begun before the fifth month, but only 55 per cent if it was started after the fifth month. With adequate amounts of heavy metal and less than ten doses of one of the arsphenamines, 75 per cent were normal if treatment was begun before the fifth month. Even with inadequate amounts of both arsenic and heavy metal 67 per cent of the children were living and apparently well when treatment was begun before the fifth month of pregnancy. When treatment was begun after the fifth month of pregnancy, with inadequate amounts of both drugs, only 62 per cent of the mothers gave birth to healthy, apparently nonsyphilitic children.

In the coöperating clinics alternating courses of arsenic and heavy metal were given rather than combined treatment with both drugs. No conclusions can be drawn from the material in regard to the comparative value of the alternate and combined methods of treatment as the latter was used chiefly in cases seen only toward the end of pregnancy when as intense an action as possible was desired in the short time available. Naturally, under these circumstances, the results would be poorer with combined than with alternate treatment.

The results of pregnancy were distinctly better in women who have negative Wassermann reactions before and during pregnancy than in those who have positive reactions. Among a group of pregnant syphilitic women treated and untreated, who had negative Wassermann reactions before pregnancy, 74 per cent gave birth to living and apparently nonsyphilitic children, while among an equal group with positive reactions only 61 per cent delivered normal children. Fifteen per cent of the children born to the latter group were living but syphilitic, while only five per cent of the children of mothers with negative Wassermann reactions were syphilitic. In a group of treated and untreated syphilitic women with negative Wassermann reactions during pregnancy, 81 per cent gave birth to living, apparently nonsyphilitic children, while only 57 per cent of the expectant mothers with positive reactions had living and apparently nonsyphilitic babies. Almost twice as many children

were born alive but died later among the group with positive reactions as among those with negative reactions. A negative reaction during pregnancy gives a greater assurance of a normal child than a negative reaction before pregnancy.

But only 28 per cent of syphilitic pregnant women even with negative Wassermann reactions, who were untreated both in previous pregnancies and the present pregnancy, gave birth to living and apparently nonsyphilitic children. When they were treated in a previous pregnancy but not in the present one, the percentage of apparently nonsyphilitic children rose to 62, and when they were treated in the present pregnancy but not in the previous ones, the percentage was 74. If adequate treatment was administered beginning early in the present pregnancy it did not seem to make much difference whether the mother had been treated in previous pregnancies or not. Miscarriages were five times as numerous among the groups in which there had been no treatment in previous or present pregnancies as among the group treated during the present pregnancy. All the evidence indicates that every pregnant woman who has had syphilis should be given early and adequate treatment throughout every pregnancy, no matter whether her Wassermann reaction is negative or positive and no matter how long the time that has passed since her infection. The mother is a possible source of infection for the fetus long after she has become noninfectious from the standpoint of transmitting acquired syphilis.

Coördination of Interested Agencies

The high percentage of normal children born to women who have been adequately treated would seem to make the problem of preventing congenital syphilis a very simple one. It is not so simple as it would seem, however, for the difficulty of getting women to come in for prenatal care early in pregnancy still remains. In a study of antepartum visits in a typical rural community of the South, by McIver,⁶ it was found that among 189 women, 32, or 17 per cent, made known their pregnancy during the first four months to someone who might provide prenatal care, and 157, or 83 per cent, after the fifth month. Sixty-two per cent were not seen until the last three months of pregnancy. Even in more favored communities than that covered by this survey it is probable that less than one-

fourth of the patients report for antenatal examination before the fifth month of pregnancy. In a study made for the Massachusetts Society for Social Hygiene, Morris⁷ found that the majority of syphilitic pregnant women were in the seventh month of pregnancy on their first visit to the clinic. Many patients do not report soon enough to be given any treatment before delivery and in many others the amount of treatment that can be given is not sufficient to protect the child. Here, as in so many fields in medicine, the problem becomes one of education. The general public must be taught the necessity for examination of every woman as soon as she becomes pregnant, not only for general obstetrical purposes but also for this special examination to exclude syphilis. Medical social workers, public health nurses, child and maternal welfare agencies, obstetricians and general practitioners must make every effort to impress on all women the necessity for early examination in pregnancy.

Even if the mother comes for early prenatal care there is too often an unfortunate delay in beginning treatment after the diagnosis is made. Prenatal clinics in which the pregnant woman is given treatment for syphilis are too few. Often there is little or no coöperation between the obstetrical section of a hospital and the syphilis clinic and patients are examined for pregnancy and treated for syphilis on different days. This increases the time and expense required of the prospective mother, who is often unable to afford either. Morris states that in one New England institution she investigated there was an average interval of six weeks between the finding of a positive blood test in the prenatal clinic and the beginning of treatment at the syphilis clinic. This delay can be greatly reduced by taking blood for a test on the day the woman reports to the antenatal clinic, having her report for her second visit a week later, and beginning antisyphilitic treatment at once at the antenatal clinic if the result is positive.

Conclusions

1. Proper treatment started before the fifth month of pregnancy insures the birth of a healthy child in 91 per cent of the patients.
2. The untreated syphilitic pregnant woman bears a healthy child in only 17 per cent of the cases.

3. If treatment cannot be started before the fifth month it is still worth while, since 65 per cent of the syphilitic pregnant women who received treatment at any time during pregnancy bore healthy children.

4. The physician in general practice or the obstetrician rarely sees clinical evidence of syphilis in prenatal cases because the infection is usually latent. A routine serologic test for syphilis must be employed to find these cases.

5. Adequate treatment of syphilis during pregnancy consists of at least ten injections each of an arsenical drug and a heavy metal, the administration of which is begun before the fifth month and continued until the end of the term.

6. Less than one-fourth of pregnant women report for prenatal care before the fifth month of pregnancy. An educational program to teach women the need for seeking antepartum care

early in pregnancy is of great importance in the control of prenatal syphilis.

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A COMMON TYPE OF EMOTIONAL PROBLEM ENCOUNTERED AMONG COLLEGE STUDENTS*

E. M. de BERRY, M. D.

Minneapolis, Minnesota

IN psychiatric practice where the illnesses are well developed, one has the advantage of a fairly well established terminology and classification which he lacks when attempting to discuss those cases which lie in the border line between the recognizably pathological and so-called normal. The two thousand cases of college students representing the background for this paper lie in this field where there are no names for things. The lack of nosological classification really indicates that investigation has not even reached the descriptive stage where types of problems are recognized, much less to the point where these types are named, their etiology investigated, and prognosis established. This paper is an attempt to pick out, from this area, a syndrome, to describe it, and at least to speculate about its causes; also to indicate its possible etiological relationship to schizophrenia. It would appear to be important to investigate the possibility that the conditions met with in these

mild cases are actually the early stages of the serious mental illnesses. I cannot hope to prove such a thesis, but I can at least show a striking resemblance between the less serious cases and the more serious ones, and between the more serious ones and schizophrenia. My justification for this is that, as a rule, psychiatric medical practice has been so organized that only the most exaggerated types of emotional disorder have come under the notice of the psychiatrist. Consequently, there has been little opportunity to observe the resemblances between such an illness as dementia precox and the minor emotional problems encountered in normal people. The general physician or the specialists in various other branches of medicine, when they have encountered the less striking manifestations, have either not been very interested, or have not recognized them as things of importance. Because of this, the profession has had little experience in investigating the earlier stages of mental disease. As a result, practically all our theory and practice in psychiatry has been based

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on observation and study of end-product conditions, supplemented by what could be gathered from incomplete histories taken from relatives and friends, or from the patient. This retrospective history, taken after the event, is necessarily inadequate. Psychiatry has been in somewhat the same position as medicine would be in regard to cardiac decompensation if physicians had had little opportunity to study the early stages of heart trouble, but had to rely entirely upon what relatives and the patient could tell them. Consequently, the prevalent opinion among physicians and even psychiatrists has been that the final illnesses which might be classified as dementia precox, manic depressive psychosis, hysteria, psychoneuroses, etc., are entities quite distinct from the worries, cares, mild depressions, sexual disturbances, etc., of normal people. A sharp line is drawn between the so-called normal and the pathological. Seeing no connection between the two, the physician regards the normal disturbances as outside his field, as belonging to the minister, the teacher, etc., and the obviously pathological as being beyond treatment. Consequently, the possibility of the existence of a relationship between the recognized mental illnesses and the emotional problems of "normal" people has been given little study.

The material in two thousand cases of college students offers an opportunity for such a study. Very few of them represent truly developed mental illnesses. The majority of these students have seen the psychiatrist for problems of which only the student was aware, or which even if they were known to others would not ordinarily have been considered indications of serious mental illness. They visit the psychiatrist because they are themselves troubled, but when they are not yet too disturbed to describe their condition. This gives the psychiatrist an opportunity to observe the beginning, the development, and sometimes the disappearance of symptoms; to speculate about the underlying mechanisms, and to observe similarities between these problems and patterns of reaction and those of the recognized mental diseases.

In attempting to understand a fully developed case of mental illness, such as schizophrenia, we are handicapped from the beginning in finding out what the environmental factors are and how

they have influenced the patient—to understand how his illness is a reaction to his situation. The very confused and exaggerated behavior and speech of such a patient shuts us off from communicating with him. We can no longer investigate the events or the effect of events on the patient. If it is true that mental illnesses grow out of and are the result of the minor emotional problems, and the way these are handled by the patient, it follows that these illnesses themselves can only be understood by an examination of the minor emotional disorders of such a group as that comprised in our cases.

In the absence of diagnostic classification, the variety of pathological material presented by the patients coming to a college psychiatrist, is bewildering, to say the least. Cases differ so greatly in their superficial aspects, their complaints, the details of their situation, et cetera that it is very difficult to group them according to similarities. Nevertheless, in the course of time they tend to group themselves loosely according to certain striking characteristics. As an example, one recognizes a group characterized by a strong tendency to get into trouble by resisting authority and convention; with an aggressive "chip-on-the-shoulder" attitude. The members of this group are remarkably similar in their behavior and in their philosophy that everything which has been accepted by people in the past is necessarily wrong, that they must go out of their way to fight any sort of convention whether it touches them or not. They have a tendency to paranoid ideas, explosive and immoral behavior. However great the variety of behavior and ideas exhibited by the members of this group, it is obvious that the central tendency is resistance to authority.

Another group is characterized by a feeling of futility, boredom, and intellectual lassitude, apparently growing out of the failure to establish a professional and personal aim or goal. The members of another group are characterized by their resorting to extravagant methods of getting attention—methods which are often dramatic, childish, and troublesome, both to themselves and others. These are only a few of the many, and from this welter I have picked out for discussion that group the members of which are characterized by self-consciousness, timidity, shyness, and a tendency to withdraw from con-

tact with other people. Although a very common type in the general run of cases, it occurs no more frequently than many others. This self-consciousness group is represented by the following composite case:

A young man between the ages of eighteen and twenty-four. In appearance there is nothing to distinguish him from hundreds like him on the campus, except a noticeable shyness. Often, however, there is no evidence of this. Usually he is fairly well developed with no obvious physical defects. Physical examination is entirely negative. More often than not the musculature is poorly developed, but this is not always the case. There may, in fact, be evidence that the student has spent a great deal of time in building himself up physically. This is borne out by the history, which often shows that he has been concerned about his physical condition even more than is ordinarily true of the adolescent. The patient reacts to examination with a great deal of embarrassment. He holds himself rigidly; sweats profusely, especially in the palms. Often, sweat runs freely down the sides of the body from the axilla; he has a rapid heart beat and increased blood pressure, which falls later when the patient has become less embarrassed. He admits that examinations frighten him, although he doesn't know why. If he has sufficient courage, the student often asks questions about the shape and condition of his body. These questions all indicate that he is afraid the physician will discover that there is something wrong about his build, often that it is not masculine enough. He has an idea that his hips are too wide, that he hasn't enough hair on his chest, or that he has too much, that he is either knock-kneed or bow-legged, that his genitals are either too large or too small. There is excessive concern about these matters, and the patient shows extreme relief when they are treated casually or when he is reassured. He is often suspicious that the examiner is not telling him the truth, that he is simply trying to reassure him. He is likely to believe that he has defects when there is absolutely no basis for such a belief. When the falsity of the beliefs in these physical defects is demonstrated he will still retreat to the idea that there is something generally wrong with him. He may insist that he is physically weaker than other young

men, in spite of the fact that he is muscularly well-developed, or that he feels fatigue more easily. What ever his complaints about his physical condition are, one finds that they are often exactly those defects that he has associated with the results of masturbation. These patients are disturbed about themselves. They are desperately unhappy, and in some cases have come to the psychiatrist as a last resort. The very nature of their trouble, timidity, makes it very difficult for them to talk to any one about themselves and they have to screw their courage to the sticking point in order to come at all. They have thought a great deal about themselves and often have hunted through the literature, trying to find a description and explanation of their condition. They have not been reassured by what they found, but have acquired a set of disturbing ideas and troublesome vocabulary. As a result they have words which they use as a diagnosis of their condition. The most popular replies to the question, "What is the trouble?" are "I have an inferiority complex," or "I am an introvert;" but they range all the way from "dementia precox" to "social maladjustment." One of the most startling complaints was "angio-pathic neurasthenia." These terms, picked up from various sources, sometimes invented by the students themselves, always confuse the issue. The patient clings to them and is usually surprised when the examiner asks for a more detailed description. When boiled down, all these complaints consist fundamentally in the idea that the patient is a failure and is doomed to remain so because he is different from and inferior to other people. His symptoms are an expression of the insecurity arising from such an estimate of himself. This conviction of inadequacy has resulted in such shyness and timidity that the patient has been able to take no part in social affairs of even the simplest kind. A typical complaint runs about as follows: "He states that he is about at the end of his rope, is thoroughly discouraged with himself and has tried in vain to 'get control of himself' for four years. He has had mastoid, sinus and tonsil infection and an infection of his leg, and maintains that all these have affected his mind. Says that he is a physical coward. For the last three years he has been intensely unhappy—has made no friends, because people despise him. He is 'mentally

tortured by bad habits.' Ideas run through his head so that he cannot sleep. At times he has felt that people were reading his thoughts and watching him on the street. At times when he believes he is going insane he has resolved to commit suicide." In spite of his belief that people dislike him and his consequent complete withdrawal from society, there is nothing in the world that the patient wants to do more than to have intimate friendly relations with people. His day-dreams are full of the most vivid social success, and he spends most of his time day-dreaming. The ideas that keep him awake at night consist of rumination about his defects, his lack of friends, and imagined humiliation of the preceding day. Sports and games, as well as social affairs, are impossible for him, not just because he cannot overcome his shyness enough to learn a sport, but because he believes there is something lacking in his physical make-up—he is "not built right," he "hasn't enough muscular coördination." He remains unconvinced by argument intended to point out that one acquires these things by practice, that there is no basis in fact for his belief that he is lacking in the necessary physical make-up. This same idea of a fundamental defect is sometimes encountered just as strongly in patients who have accomplished in sports. They ignore their accomplishment and consider only their failures. In the intellectual sphere there is the same underestimation of ability, the same argument in the face of facts to the contrary, and the same conviction that the difficulty is innate, or constitutional. As a rule, he feels out of touch with his parents, and with other members of the family. He almost always indicates that his parents do not understand him, that their interests and attitudes toward the world are different from his own. He often feels that his parents have little affection for him, or that they do not expect him to achieve success. When he is forced to admit that they do love him, and do expect him to succeed, he gets little satisfaction from this realization because he feels that he is unworthy of it—that when his parents find him out, as they must eventually, they will lose all respect and affection for him, and be doomed to disappointment. The patient shows varying degrees of hopelessness about the future; but even in the mildest case he rarely expects success and

happiness. This is an inevitable conclusion from his belief in his inadequacy and failures in the past. Whatever the successes have been, they are discounted as accidents, in no way dependent upon his own efforts. His failures, on the other hand, are invariably attributed to his innate weakness. He has had little contact with members of the opposite sex. Many patients, even among college seniors, have never had a date with a girl, and would consider such a thing impossible. Even when the shyness has been overcome enough to permit association with other young men, he has been terrified of any meeting with girls. He is convinced he is unattractive to them, and often that he is positively repulsive. His reasons for belief in his unattractiveness include all his ideas about his inferiorities and, in addition, a lot of peculiar ideas centering around a vague belief in his sexual inadequacy. These ideas of sexual inadequacy range all the way from the simple one of lack of sexual attraction for girls to fantastic ruminative ideas of impotence, closely resembling schizoid productions. There is usually a compensatory day-dreaming running to the most outlandish scenes of sexual prowess. These day-dreams are in turn another source of worry. The patient often believes them to be abnormal, and, as such, further indication of his defectiveness.

In regard to the time of the onset or the first striking exacerbation of the difficulty, the histories of these patients reveal a remarkable similarity. At some point in early adolescence such a patient begins to drop out of the usual groups of those of his own age because he feels that he is not wanted. He begins to suspect that he is not liked. A frequent idea is that the boys think he is a sissy. With other people he becomes intensely self-conscious, and is afraid his self-consciousness will be noticed. He makes little effort to get into things with the other boys and often actively avoids their company. He is afraid that he will not measure up to their standard in games, wise-cracks, et cetera; consequently, he fails to develop skills in these things simply through lack of practice. Although not actually inadequate, his belief that he is has the same effect, in keeping him out of games. He seems, however, never to attribute this to a lack of practice, but develops theories that he is either irremediably defective or that he has injured

himself by masturbation. He withdraws more and more. He may develop solitary amusements, such as reading, et cetera. He may even develop a protective contempt for other more active social boys with a lot of fantastic philosophy to justify this sour-grapes attitude. Sometimes this reaction becomes so well established as to give an entirely different superficial coloring to the case. Feeling themselves unable to compete with their fellows in ordinary things, these students seek out interests and activities in which failures are not so evident. They may go in for music, literature and art with emphasis on taste in the more unconventional, modern and uncertain expressions in these fields. They scorn the robust Babbitts, who seem to desire success which other people will value. For a time such a student may actually fool himself into an uneasy happiness and almost succeed in having some respect for himself when he is alone. Sooner or later this defense breaks down but, in the meantime, he loses chances of learning how to get along with people, how to make himself liked, so that his imaginary disabilities in these fields become real ones. He is faced with a realization of this when he comes to college, where he is forced to meet people he has never seen before. Unsocial behavior in college is the most typical thing about the group. Such a student shrinks from all contacts with people, and goes to the greatest lengths to avoid all but the most necessary ones. Registration is an ordeal, he has not the courage to answer questions about the courses he wants to register for. He allows himself to be pushed about with no other thought than to get it all over as quickly as possible. His self-consciousness becomes so painful in class, especially in recitations, that he cuts as frequently as possible. All purely social affairs are avoided like poison.

There are, in all these symptoms, however varied they may seem, certain things in common. Underlying them all is an exaggerated desire for the approbation of others; a paralyzing fear of failure to get it, and a belief that there is something intimate to hide. Accompanying these are day-dreams of directly opposite import. In fantasy, these patients achieve exaggerated social success, are leaders in everything, are great lovers, great financial successes, great sportsmen, etc. The fantastic character of

these day-dreams is the more marked the more the student is withdrawn from association with people in real life, until, in the most severe cases, they become so vivid to the patient and assume such an emphatic, ungovernable character that they closely resemble the fantastic delusive material of the dementia precox patient.

The day-dreaming needs little explanation, since it is a common observation that people tend to compensate in their day-dreams for what they lack in real life. Nor does the exaggerated desire for affection and approbation need comment, since it is what we would expect. Because these people have to shut themselves away from intimacies with others and refuse to attempt achievement, they get less approbation than any one would be content with. Even in those cases where success has been attained and the person is admired, he is unable to recognize admiration as such, therefore gains little satisfaction from it, and is forced to supply the lack in his own imagination.

The lack of self-confidence, and the fear of failure consequent upon it, and the idea of there being something to hide, require more consideration, especially since the loss of self-confidence bears no obvious relation to the experiences to which it is attributed by the patient, but often arises from quite different sources. Occasionally, it is true, the very mild cases give adequate reasons for their condition, and can point out perfectly clearly the experiences which have caused them to feel inferior. When they can do this, their trouble is never very serious, and, as a rule, they invent their own therapy. The more serious cases, however, rarely show such insight. They either admit frankly that they have no basis for their feeling of inadequacy except an emotional conviction that it exists, or they resort to fantastic explanations. These are often bizarre, illogical, poorly verbalized, and show that fragmentation so characteristic of schizophrenic thinking. That there is no essential difference between those who think clearly about the matter and those who offer fantastic explanations is shown clearly by the ease with which the same patient may pass from one attitude to the other. One finds, for instance, that a patient who seems lost in these fantasies will, upon achieving some slight social success or evidence of affection, give up to the fantastic

explanations and discuss his problem clearly and logically.

In the histories of all of them, however, one finds either that things have happened to the patient which would cause anyone to doubt himself and to expect failure, or circumstances, misinformation, and ignorance have caused the patient to interpret otherwise innocuous experiences as weaknesses in himself, rather than as the accidents of fortune. Suppose for example a child is changed from one school to another where the curriculum and teaching methods are different. He fails, not because he is not intelligent, but because the first school did not properly prepare him for work in the second. If this is not explained to him, or if his elders give the impression that his failure is due to laziness or stupidity, he will usually believe this himself, and the misinterpreted experience will give him a feeling of personal insecurity. Of two children, both with drunken, abusive fathers, one will come through with little insecurity and with a fairly objective attitude toward his father, while the other will develop a strong sense of insecurity, expressing itself in shyness, timidity, and lack of initiative. In the case of the boy who remains unaffected by such experiences, we find that other securities have neutralized the expected feeling of insecurity. In the other case, we find not only a lack of compensatory success in other situations, but also misinformation, causing the patient to expect in himself the same undesirable traits shown by his father. We may find, for example, that the boy has got, usually from the remarks of relatives, or his own misdirected reading, the idea that undesirable personality traits are hereditary and that he takes after his father. The unfortunate experience is only effective when it is interpreted in a personal way and in conjunction with other experiences to indicate some weakness or defect in the patient himself. There is no reason to believe that this difference in interpretation is due to any peculiarity of make-up or constitution, because in each case it can be shown to be due simply to circumstances surrounding the individual. Now whenever the life history of one of these students shows a preponderance of these interpretations over those experiences which he can interpret to his credit, there is accumulated a store of insecurity which encroaches on all activity of

the patient, even upon those unrelated to the particular field in which he feels inadequate. It becomes so great that he is no longer able to profit by his successes. Under these conditions he develops into the exaggeratedly timid, self-conscious, fearful type that we are attempting to explain.

There is an infinite number of things which may promote, either directly, or indirectly through misinformation, this feeling of inadequacy. Each case-history presents a variety of them. One may mention, for instance, the broken home, in which situation a child naturally feels a lack of family backing and affection; ill health or physical defect, which directly lessens his feeling of personal worth; lack of opportunity to develop skills in sports or in social give and take, which the child or the young man takes as evidence of lack of ability; failure to be asked to join a club; invidious comparison with other members of the family, et cetera. It would be a waste of time to discuss them or even to classify them, but among these factors, the conflict over masturbation plays a rôle of peculiar importance in all these cases. It seems to act as a sort of fixing agent for all the other feelings of unworthiness. This is probably due to the ease with which misunderstandings about its significance arise, and the difficulty the patient encounters in getting any accurate information about it. That it is an important factor in the development of the self-consciousness syndrome is indicated by the fact that it is rarely missing from the case; that the worry over it is in direct proportion to the severity of the symptoms, and that the conflict over masturbation first occurs just before that point in the case when the symptoms assume their characteristic tone.

Masturbation is practiced by practically all healthy young men. There have been very few especially among healthy, untroubled college students, who have been to see me who have not admitted masturbation as a regular practice. Those who did not admit it had a strong fear of sex, and in practically every case manifested some peculiar, rather symbolic expressions of repression. Those who have had frequent sexual intercourse have masturbated, as a rule, as well as those who have not had intercourse. On no occasion have we had any evidence that masturbation itself caused any difficulties. It is the

psychological concomitants that are disturbing, and these have been based, invariably, on the fear of the individual that masturbation itself was bad and dangerous, or that the fantasies which accompanied masturbation were expressions of abnormality. As to the frequency of masturbation: we have been unable to discover any case in which "excessive" masturbation has caused any trouble in itself. We have seen a number of young men, especially among the athletes, who masturbated more than once a day over long periods of time, without any discoverable damage, either physical or mental.

The evil effects of masturbation seem to arise entirely from the conflict, which arises because the individual believes that masturbation is going to harm him either physically, mentally or morally. There may be fear of feeble-mindedness, insanity, or bodily disease and weakness; fear of moral degradation and sin; fear of lack of self-control in other fields because of failure to maintain resolutions against masturbation; or a fear of social ostracism if found out. These ideas are based on information received from books, pamphlets, lectures, or from other boys; occasionally from parents or ministers, and sometimes from school teachers and faculty advisors, who are convinced that masturbation does have these harmful effects. Even when no such definite information has been received, the individuals have inferred from their parents' attitude of antagonism toward sex that masturbation was an evil practice. All of these ideas about sex have generally the effect of making the individual feel insecure about himself, because he regards the practice as indisputable evidence of his defectiveness. This is true, even in those cases where the patient is able to eliminate other sources of insecurity.

In all our cases of extreme self-consciousness this conflict has been observed. Furthermore, the severity of the self-consciousness seems to be in direct proportion to the conflict over masturbation. Without this conflict other sources of feelings of inadequacy and insecurity seem to be peculiarly ineffective in producing severe and permanent disturbances of emotion and behavior. It appears to act as a crystallizing agent, around which all the other imagined inferiorities group themselves, and from which the real ones acquire added significance. This importance is

demonstrated by the fact that when the masturbation conflict is cleared up by an explanation of its physiological nature, its harmlessness, the other sources of insecurity, which previously had been of such concern to the patient, lose so much of their emotional significance and value that the patient is able to handle them in a logical or compensatory manner. In some cases the patient, relieved of his sexual conflict, tends simply to forget his other worries, or, at most, to regard them with little concern.

To those familiar with schizophrenia, there will be immediately obvious a general but very fundamental resemblance between that disease and the syndrome described here. In both cases we find the patient turning away from activity and from contact with his fellows. In both cases we find the patient deriving his satisfactions from fantasy instead of from real accomplishment. Both kinds of patients develop a conception of themselves that is quite at variance with the facts. The delusions of the schizophrenic differ from the false ideas of the self-conscious group only in being slightly more fantastic and perhaps symbolically expressed. In both cases, the ideas are emotionally determined and impervious to demonstrations of their falsity. In their introspections our self-conscious patients show in miniature the disturbances of thought so characteristic of schizophrenic thinking. In particular cases these and other resemblances could be pointed out in the closest detail. It has long been recognized that dementia precox or schizophrenia arises in a particular type of person—the so-called shut-in, prepsychotic personality. It seems to me that the self-conscious patient described above is identical with this type. Most of them, however, do not develop a schizophrenic condition serious enough to warrant the diagnosis. The conclusion that immediately suggests itself is that, given the prepsychotic type, there is some essential difference between those who develop the patent disease and those who do not. Such factors as hereditary constitution, endocrine imbalance, disturbances in the filtration mechanism of the choroid plexus have been offered as explanations as to why some cases go on to frank disease and some do not. While no one can deny that these factors may play their part in a particular case just as any other pathological

physical condition may additionally handicap such a patient, there is little reason to believe that they are essential or specific in the etiology. The resemblances between the self-conscious type (or the shut-in personality) and the schizophrenic are so strong that we are forced to regard the one as only an exaggeration of the other. The two reactions obviously differ in degree rather than in kind. It would therefore seem an unwarranted violation of the law of parsimony to postulate a different set of causes for schizophrenia than those demonstrable in the less serious conditions. It would be more logical to assume that the same cause which produces the one condition produces the other, and that in the more severe cases (the schizophrenics) these factors have simply been increased in number and degree of importance.

Summary

1. It is possible to describe a psychiatric syndrome characterized by self-consciousness, shyness, feelings of unworthiness and insecurity.
2. Cases falling in this group have, because

of circumstances, misinformation, ignorance, etc., been led to interpret certain experiences as evidence of inferiority in themselves.

3. Their reaction to this is the natural one of self-consciousness, withdrawal from group and personal contacts, with the development of pathological compensatory day-dreaming closely resembling the production of schizophrenia.

4. Because of the accessibility, as contrasted to the inaccessibility of the schizophrenic, the physician is able to observe the causal relation existing between the patient's behavior, his emotional disturbance, and his previous experiences. He is able adequately to explain the syndrome in terms of experience without resort either to physical factors, on the one hand, or to deep psychological analysis, on the other.

5. Since the etiology of the self-conscious syndrome may be adequately explained in this manner, and since this condition closely resembles schizophrenia, it is suggested that investigation in this prepsychotic field should throw considerable light on the etiology of the more serious disease.

A PLEA AGAINST DEFEATISM IN MALIGNANCY*

Report of Some Favorable Cases

ARNOLD SCHWYZER, M.D.
Saint Paul, Minnesota

PESSIMISM and defeatism are not infrequently encountered in the treatment of malignant conditions. Indeed the good and lasting results are often discouragingly few. This caused the cancer campaign. We have to get these cases earlier. Results depend on the length of time elapsed before we see the patient, in other words the length of time the growth had the chance to develop, at times under improper and damaging treatment. The rapidity of the growth and with it its histologic character vary greatly, the most important feature in the latter being the relative number of mitotic figures (Broders' four groups). The age of the patient comes into consideration; in general the older the patient the less active the neoplasm,

though there are always exceptions to the rule. The location of the growth decides the accessibility and therefore the operative possibilities and dangers. But perhaps more than any of the mentioned factors is the tendency to metastases which determines the chances for cure. The carcinomas which for a considerable time remain localized to the primary area are of course much more favorable, and among them those which grow less by infiltrating invasion of the surrounding tissues than by local expansion, naturally afford a better prognosis.

I have picked out, among others, cases of long lasting cures as they happened to come to memory, with no attempt to go through my whole material, for which the time was much too short. Let me say beforehand that such favorable results are among numerous sad ones and that

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here is no intention to give the impression that such results are very frequent. Every surgeon of experience has such bright spots in his recollection to lighten his heart, while all

roentgen and radium rays and early block dissection of the neck glands.

Carcinoma of the upper jaw.—In 1928 Bloodgood stated that between 1892 and 1924 only

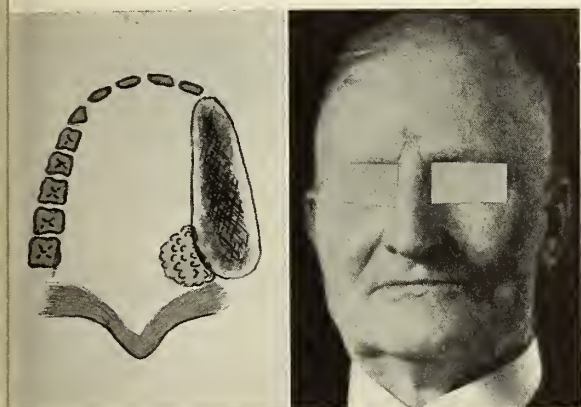


Fig. 1. Postoperative appearance in case of carcinoma of upper jaw. Notice hole in roof of mouth and recurrence at inner posterior border of the defect in the palate (see text).

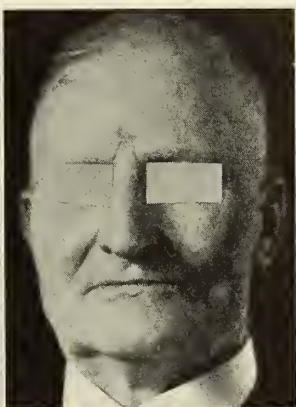


Fig. 2. Unretouched photograph of patient (Fig. 1), taken April, 1937; no sign of recurrence.

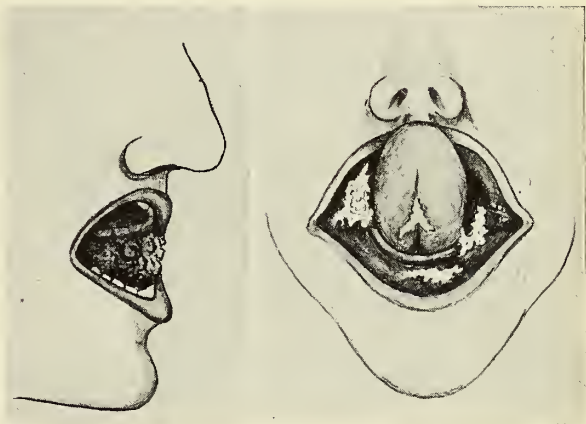


Fig. 3. (left) Carcinoma of inside of cheek, developed from leukoplakia.

Fig. 4. (right) Same case four years later.

too often his best efforts cannot avert an ultimate defeat.

We will try to make a hasty survey of carcinomas in different parts of the body and start at the top. The *carcinomas of the scalp* are at times seen in an advanced stage when they are no more movable. Fortunately the tendency to invasion of the regional lymph channels is often not great. Bone may have to be removed, maybe in its whole thickness, over a large area. Even where a portion of dura and some area of the cortex of the brain had to be removed, permanent cures were obtained in some cases.

The *carcinomas of the face* are of two kinds, either squamous cell or basal cell carcinomas. The latter have less tendency to invade the deeper structures and are therefore more benign. Even the squamous cell type, the cancroids, often do not invade the regional lymph nodes early. Bloodgood did not find them invaded in most cases and claims that, when they were invaded, the block dissection of the neck glands did not produce a cure. In the epitheliomas of face and lip, radium has yielded in a large percentage of cases very satisfactory results observed over long periods. Nevertheless one encounters now and then a desperate case of rapid dissemination notwithstanding energetic use of

one case of a cure lasting as long as twelve years was observed among his thirty-seven patients. That case was treated with the soldering iron at three different times. I want to mention a patient of ours in whom a partial resection followed by the application of the hot iron and radium in 1915 has resulted in what you may call a permanent cure. A horizontal incision from the angle of the mouth backward had been made to get sufficient access. A recurrence soon occurred in this wound but with the help of radium the thickening disappeared again. There also developed a recurrence the size of a five cent piece at the posterior angle of the defect in the palate (Fig. 1). It was burnt away with about one centimeter of surrounding tissue. The patient, who is now seventy-one years old, has remained well for over twenty-two years. The photograph (Fig. 2) was taken two weeks ago. His upper teeth are gone but he wears a plate which closes the hole in the palate and nothing abnormal can be detected in his speech.

On the *inside of the cheek* one sees quite often carcinoma arising from areas of leukoplakia. They are slow growing, but as leukoplakia can start up and very often does start up in new places, the cases are quite insidious. One such patient, to pick out a real bad one, came to me in May, 1919, with large areas of leukoplakia on the inside of both cheeks and under the tongue. On the left side there was a nodular, distinctly

carcinomatous, rather large, area. This irregularly thickened area had already invaded the red of the lips in the left angle of the mouth (Fig. 3). The first signs of a growth had appeared in 1916, three years before I saw him. The patient, a cigar maker, had been chewing tobacco constantly. Extensive excision seemed to have a good result and the patient did not show up for four years. Figure 4 shows the condition he then presented. After the second operation he felt better again for three and one-half years. In the meantime radium had been applied. The next intervals were shorter. Both cheeks by now had become involved. In January, 1932, a carcinomatous fistula of the cheek was burnt away and the opening closed by a flap, but he died of cachexia in December of the same year, fifteen and one-half years after the first onset of the condition, and twelve and one-half years after the first excision.

Carcinoma of the tongue.—In the earlier years of this century Koenig declared that all patients died within one or one and a half years and all of Dollinger's cases died within two years, as reported in 1908 at the International Surgical Congress at Brussels. In 1920 lasting cures were reported in thirteen per cent. Are not such reports from leading surgeons appalling! However, in recent years since we have the combination of surgery with radium we have seen considerably better results, though the glands are quickly involved in these cases. Some time ago I reported two patients. One of them was well for ten years after a resection of the posterior half of the tongue, though one of the submaxillary lymphnodes had been involved. After these ten years a little superficial carcinomatous node had to be excised near the glosso-epiglottic fold. The wound healed promptly, but a few months later the patient died from pneumonia. The other patient had a carcinoma of the lateral side of the base of the tongue involving the lower portion of the tonsillar area. He remained free from any local recurrence for four and a half years, when he was reported to have died of pneumonia. However, judging from his doctor's report of the course it looked more like a pulmonary metastasis. He had been treated three times by cauterization in the course of the four months before I saw him. This was of course disastrous, especially on account of the delay.

Dr. A. R. Colvin mentioned to me the case of a woman with a cancer at the edge of the tongue, the size of a large peeled almond, which was treated by him with radium implants in September, 1925, without block dissection of the glands. She is still living and well today, eleven and a half years after that treatment. The growth was apparently very radio-sensitive.

Dr. H. P. Ritchie also told me of a woman with carcinoma of the side of the tongue involving the tonsil. After a block dissection of the neck glands he removed the walnut-sized growth together with the tonsil and its anterior pillar through the mouth. This was in February 1921. A year later a carcinomatous node under the jaw was removed. The patient is living and well today more than fifteen years after the second operation.

In another case a *carcinoma of the hard palate* was burnt out with the hot iron and was quite well ten years later when we last heard from the patient.

The *pharynx* is more difficult of access and the operative results are not very satisfactory, but many pharyngeal growths are fortunately quite radiosensitive, as are those of the epipharynx. It is for the most part better to pin our hopes on irradiation. Some soft growths dwindle away beautifully under irradiation.

Carcinoma of the floor of the mouth and lower jaw is a very serious problem. Energetic surgery assisted by the hot iron and radium in combination with block dissection of the neck glands may yield good results. The neoplasm reaches the bone at an early stage and a section of the mandible has to be removed. I remember two patients who remained free from local recurrence till they died, one of pulmonary, the other of liver metastasis. The latter case was of particular interest. There existed a very extensive infection in combination with his carcinoma. A mass the size of a hen's egg, partly fluctuating, was under the left side of the mandible. It readily broke down and presented an ugly ulcer (Fig. 5). The inside of the mouth showed an irregular growth along the left alveolar process extending far back. This was in January, 1929. A number of operations, including a pedicled insertion of a piece of rib for the replacement of the resected jaw, gave a very gratifying result. Dr. O'Connor of Ladysmith, Wisconsin, reported that the patient had no

trouble at all locally and that the jaw was in very good functioning order till he died from an enormous carcinoma of the liver in January of this year, eight years after we first saw him.



Fig. 5. Carcinoma of floor of mouth and lower jaw, combined with extensive abscess formation. Appearance after clearing up the worst of the infection and burning out of the carcinomatous areas. The patient died eight years after we first saw him. There was no local recurrence.

ry gland. I first saw this man in March, 1923, when he stated that six years before he had noticed a lump in the left side of his neck and that it had steadily grown since then. The

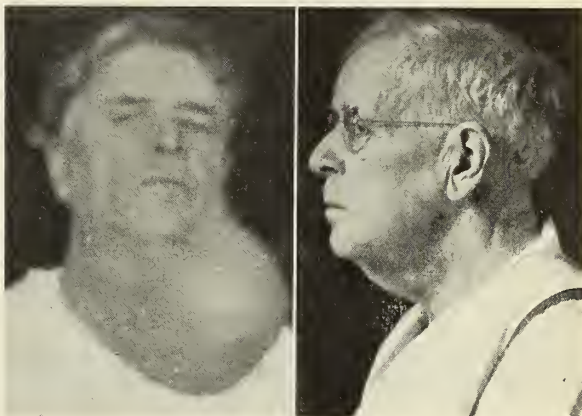


Fig. 6. (left) Adenocarcinoma of submaxillary salivary gland, April, 1923. Tumor weighed 4 pounds 13 ounces. Recurrence removed one and a half years later.

Fig. 7. (right) Same patient as shown in Figure 6. Photograph taken April, 1937; no signs of recurrence.

Both the patients mentioned had perfect local results, but came to the surgeon too late.

This gentleman here, who was kind enough to come for our meeting, had a similar condition which was, however, not as far advanced. He suffered from an ulcerated pavement cell carcinoma of the anterior and right antero-lateral aspect of the gums. While it had extended only moderately on the inner side of the gums it reached externally from the left outer incisor to the right second premolar tooth and had a greatest width of three centimeters. The left canine and the second right molar were extracted and the division of the jaw went through their sockets. With the help of the Albee saw it was possible to leave a bridge of bone along the lower border of the jaw. The operation was done under regional anesthesia by blocking the third branch of the trifacial. This was on November 5, 1928, and two weeks later a block dissection of the neck glands followed. Their microscopic examination showed no invasion. Large doses of radium rays before and after operation were applied. He is now free from any signs of recurrence for eight and a half years.

This next patient presented an unusual condition. As the picture (Fig. 6) shows he had an enormous tumor on his neck. It proved to be an *adeno-carcinoma of the sub-maxillary saliva-*

largest circumference of the neck was 72 cm. The hyoid bone was directly under the right ramus of the lower jaw and the larynx was turned 80 to 90 degrees to the right. The tumor was removed under local anesthesia on April 4, 1923. An ovoid distinctly separate tumor the size of a plum could then be seen in the sub-maxillary region and was also removed. A year and a half later he returned with a mass the size of a duck's egg in the carotid region. He had had radium after the operation and had it again after the removal of this recurrence (November 5, 1924). On Jan. 19, 1925, we made a block dissection of the glands and the tissue at the angle of the jaw including the lower pole of the parotid where a nodule was felt. Microscopically there was no tumor tissue found. This patient has now remained well for fourteen years since the operation. His present age is seventy. The mass removed had weighed four pounds and thirteen ounces (about 2,300 grammes). The malignancy was of moderate activity. Patient is shown.

The *larynx* excellently demonstrates how important an early recognition of carcinoma is. Here the smallest nodule on a vocal cord causes unrelieved hoarseness and cough. The cases therefore reach the doctor very early. While carcinoma of the parts surrounding the larynx,

as of the pyriform sinus or the retrocricoid pharyngeal area, offer a poor prognosis on account of their location as well as, apparently, their tendency to spread early into the lymphatic



Fig. 8. Case of sarcoma of mediastinum, eleven and a half years after radium treatment. Roentgenogram shows no recurrence.

tics, the so-called intrinsic carcinomas of the larynx for the reason mentioned are of very much better prognosis, especially in expert hands like Dr. New's of the Mayo Clinic. New and Waugh reported five year cures in 82 per cent where only a thyrotomy had to be performed, namely where the growth was quite small, and 56 per cent after laryngectomy. Very much depends on the degree of malignancy as judged by Broders' classification. None of the patients with carcinoma of group four were living five years later. Such cases are now treated by them with pre-operative and postoperative roentgenization. C. H. Mayo performed a laryngectomy on a patient who was perfectly well when last reported twenty-five years later, and New had one who was well twenty-four years after operation.

Carcinoma of the breast is seen by the surgeon at a considerably earlier date of late years due to the cancer campaign. The women have become cancer minded and many live in constant fear, which is an unavoidable though somewhat unfortunate side effect. But those who really have become afflicted with the disease have greatly benefited from this campaign by reaching the surgeon earlier than formerly. In my material (which consist of a little over 250 operations for

carcinoma of the breast) I have used a moderate preoperative irradiation on three successive days, usually directly preceding the operation. The postoperative treatment is also quite moderate but very protracted as I outlined it before your society in 1934.* Since we have followed this course our results have been 36 per cent living for more than ten years. But after all this is a poor outlook and we must strive to get still very much better permanent results. For the present, besides of course competent surgical and radiological treatment, the one item for possible improvement is to get the cases earlier.

Malignancy of the mediastinum is to be treated by irradiation, unless exceptionally favorable conditions for a surgical procedure should offer themselves. This young lady here was sent to me in December, 1925, with the diagnosis of lymphosarcoma† of the upper mediastinum. She was then fifteen years old. In April, 1925, her surgeon had made an exploration and biopsy through an incision above the clavicle. She came to us with a fistulous, rather extensively ulcerating opening and was very emaciated, weighing only seventy-one pounds though she was tall for her age. Before her illness she had weighed ninety-one pounds. She had had much pain in the left chest and arm for eighteen months. In April, 1925, a mass was seen on the roentgen film below the left manubrio-clavicular junction and in July the mass had further increased in size. From April till she came to us in December she had twelve x-ray treatments. Nevertheless according to her surgeon's statement the mass had almost doubled in size from July to November. We found it to be the size of a goose egg. A probe could be inserted through the fistula into the chest cavity till it reached the direct neighborhood of the posterior chest wall at the inner end of the scapular spine. Somewhat over 8,000 milligram hours of radium, partly in the tumor and partly outside, relieved the pain and the wound closed. Two years later she had gained from 71 to 110 pounds and has been well ever since, more than eleven years since the operation. The photograph (Fig. 8) was taken in April, 1937. Recent roentgen films show no trace of a shadow.

*See Minnesota Medicine, December, 1934.

†The exact nature of the tumor I cannot state. It was a very cellular growth of sarcomatous appearance causing severe radiating pain and growing rather rapidly and steadily notwithstanding x-ray treatment.

Another tumor of the size of a rather large orange was removed from the upper mediastinum by splitting of the manubrium of the sternum. We had judged it to be a fibro-sarcoma, but

herent. The patient died about two years later from diffuse invasion of the lung on the opposite side, while the autopsy showed the operated side free from any recurrence (Fig. 10). The condi-

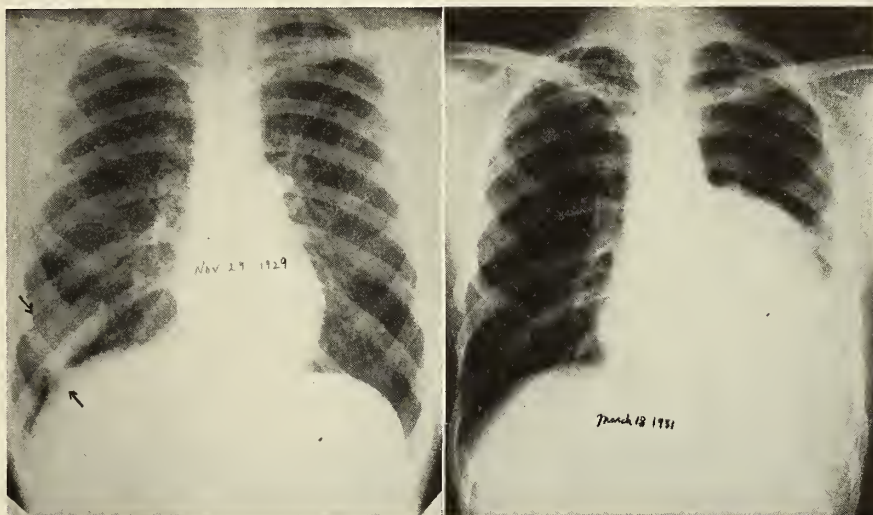


Fig. 9. (left) Roentgenogram showing endothelioma of the pleura, right lower field.
Fig. 10. (right) Same case as Figure 9, fifteen months after operation. There was no recurrence on the side operated on, but bulky recurrence on the other side, later filling the entire left lung.

Professor E. T. Bell decided it was a very young fibroma. The patient being well for seventeen years harmonizes better with Professor Bell's diagnosis.

An enormous *angiosarcoma of the sternum and anterior mediastinum* in an extremely cyanotic patient was treated with radium insertion into the growth. The patient had been unable to lie down and had to spend his nights in a chair for many weeks before. After he had somewhat over 5,000 milligram hours in the tumor, at later sessions through the sternum in the mediastinum, he was able to be about, go to the theater, and sleep well in bed. However, the report came some time later that he died of pneumonia. No further information was obtained.

Primary *malignancy of the pleura* is rare. We have here endotheliomas or sarcomas. Most reported cases are diffusely spread formations over the large pleural surface and are thus not amenable to surgery. An endothelioma of unusual appearance may therefore be mentioned. It had started as a localized mass in the lung field and had steadily grown (Fig. 9). It was removed with a portion of the chest wall and a piece of diaphragm where it had become ad-

tion had been watched for five months before we saw the patient and two aspirations had been made. Early recognition of the character of the growth might have given a better outcome.

Carcinoma of the lung, if recognized early and if it is not of the most vicious form, may yield a good result now and then. Sauerbruch reported back in 1920 two cases living three and five years respectively after operation. However, the reported operations are mostly of too recent date to appraise the results properly.

Carcinoma of the esophagus is still a dark chapter. The results with radium in combination with dilatation yield only short-lived, but at times temporarily very gratifying results. As a paradigm I will mention just one case. One of my patients who had been unable to swallow even water for the two preceding days, told me, smiling shyly, after about ten days of esophagoscopic dilatation and radium insertion, that he stole a piece of meat from his neighbor in the next bed and that it "went down fine." But he died nine months later.

Carcinoma of the stomach is a most important chapter, but time presses and the subject was recently discussed by me.[†] I there mentioned

[†]See Minnesota Medicine, June, 1936.

three of my patients who were free from recurrence for over twenty years. The diagnoses were verified by Dr. E. T. Bell, professor of pathology at the University of Minnesota. One of these three, on whom an extensive resection of the stomach was performed, you can see here. He is in good condition for his eighty-nine years. The operation was in April, 1915, twenty-two years ago.

Many excellent results are obtained in *carcinoma of the large intestine*. The colon yields the best results in malignancy of the intestinal tract. I heard recently from a St. Paul colleague that his aunt, on whom I had operated in 1911 for a carcinoma of the sigmoid flexure, had remained free from any recurrence for twenty-three years until she died three years ago from heart trouble. It had been a one-stage end-to-end resection. Time does not allow me to go into any details, but let me emphasize that the good results are principally due to the fact that the lymphatics are not nearly as readily invaded as for instance in carcinoma of the stomach or breast. I can illustrate this perhaps best by mentioning a patient who had received massage for six months for what was apparently thought to be a simple constipation. There was a partially obstructing carcinoma of the cecum and massage was probably in part the cause of bleeding resulting in a severe anemia which necessitated a large transfusion before we could operate. If anything invites dissemination it is massage. Nevertheless this patient is today hale and hearty twenty-three years after this operation and notwithstanding the fact that on March 13 of last year we had to resect her stomach for carcinoma of the pylorus. Particular attention was paid to the site of the ileo-colic resection. There was no direct contiguity of the two viscera and the two growths appeared to have no connection.

This lady here happened to come to my office four weeks ago to have a ganglion removed from her right index finger. Twenty-four years ago she had an ileo-colic resection for carcinoma of the cecum and ascending colon. Fourteen years ago she went through an extensive Halsted operation of her right breast. As you can see, she looks exceptionally youthful for her sixty-six years.

The constitutional resistance is of course an important factor in serious operations, and some

patients do much better than others under similar circumstances. One such fortunate one was kind enough to come here today. This lady here had a cholecystectomy for gallstone colic in February, 1921. In 1928 she had an automobile accident and among other things broke her nose. In May, 1929, we resected the upper pole of the left kidney for an abscess with old cheesy material. In January, 1931, she came with a carcinoma of the uterus. As she is very heavy a troublesome hernia had developed at the site of the kidney operation; it was repaired in October, 1931. Finally in September, 1933, she went through an ileo-colic resection for carcinoma of the cecum. She is now sixty-nine years old, and, as you can see, in very good condition.

With this last case we have come to speak of *carcinoma of the uterus*. The percentage of cures as reported from large clinics runs around 20 per cent. Though Shaw of Manchester, England, reports (Surg., Gyn. & Obst., Feb., 1937) his results to reach as much as 40 per cent for five year cures, this of course does not yet represent permanent results. One is impressed that carcinoma of the uterus is still a very sad chapter. But it is far from a hopeless one. Since the use of radium, especially in carcinoma of the cervix, the prognosis has distinctly improved. I have some patients who have now been well for considerably over twenty years, but for obvious reasons I could not ask them to come here, nor is there much sense in showing uncomplicated cases at this time. I appreciate therefore so much more the consideration of the next two patients in coming here. They both were advanced cases.

This lady here came to my office last week for control. In April, 1926, an attempt at hysterectomy revealed that the growth had invaded the adjoining wall of the bladder. The hot iron and radium had to be resorted to and later a vesico-vaginal fistula was repaired. As you see, she is in perfect health and there are no signs of any trouble.

The case of this other lady was the limit of what I could handle. When she first came to see us in April, 1924, her condition offered very little hope. The growth of the cervix was large, ulcerated and had grown over to the cul-de-sac. The Percy cautery operation is a blessing for such advanced forms. The parts are

burnt through a cooling speculum until the assistant's gloved hand in the abdomen holding the corpus uteri cannot stand the heat any longer. You have to go the limit if the neoplasm has invaded neighboring territory. The result in this case was a hole in the rectum, an opening into the bladder and a fistula of the left ureter. After the cautery operation 6,900 milligram hours of radium were given. Later we closed first the opening into the rectum, and then, the ureteral fistula being in close proximity to the opening into the bladder, the two were repaired as one fistula by a high colpocleisis which led the urine from the left ureter into the bladder. You see it takes a very brave patient to go through all this. In February, 1930, the note was entered that she had gained from 103 to 133 pounds. But she had much pain which then was materially relieved by a resection of the superior pelvic plexus. Though she still uses dilaudid and cannot be called an entirely well person, she is quite cheerful and looks very well. Recent examination showed no recurrence. It is now thirteen years after that Percy operation for a well nigh inoperable condition.

I am aware that very important chapters had to be omitted, but I take comfort in the Frenchman's point of view when he says that the art of boring people is to be complete.

And so to conclude, let me show you just one more patient. When seventeen years old she was suffering from an unusually large *chondroma of the right femur* (Fig. 11). These tumors are generally malignant and of bad repute. The growth was the size of a large grapefruit with the bone running through its middle. The femur was resected as we preferred to take the chances rather than exarticulate at the hip joint, which would anyway not have been permitted by her parents. From the trochanter to the middle of the shaft the femur was resected together with the tumor and some surrounding loose tissue. A piece of the fibula of the same leg was implanted. This was in 1910. She had an accident and

broke the implant but it healed in a fashion (Fig. 12). Anyway, she later married, and, as you can see, she walks tolerably well with the use of a cane. She states that she has no pain in



Fig. 11. Chondroma of the right femur.

Fig. 12. X-ray of transplant in femur, years after removal of growth. Same case as shown in Figure 11.

hip or leg. There has been no sign of recurrence in these twenty-seven years.

Even if such a fortunate outcome is to be won by many disappointments in the sad chapter of malignancy, it is worth weathering such disappointments. I was told that in asking me to present such cases the idea of the committee was to stimulate the practitioner to think of the surgical possibilities in malignancy and not to allow the patient to lose his one chance by procrastination. Defeatism in carcinoma means defeat, while courageous aggressiveness tempered by sane judgment brings you not so very infrequently a most gratifying result. To be sure, many, all too many, disappointments will have to be endured, often where we had our whole heart in it; but this should only spur us on to try to improve the results.

In showing you some cases with long standing cures, what I said in the beginning must be repeated, namely, that such results are seen in every surgical practice of long years and without a doubt in many to a larger percentage than in my own.

VERSION AND BREECH EXTRACTION*

R. T. LaVAKE, M.D., F.A.C.S.

Minneapolis, Minnesota

THIS paper will not dwell upon the usual indications for version, but will aim to bring into clear relief, for purposes of discussion, a more moot indication furnished by a group of vertex presentations, generally occiput-posterior, but sometimes anterior positions, in which labor is allowed, too frequently, to become prolonged beyond safe limits, in the belief that normal delivery may obtain, or low or mid-forceps may eventually be used, and in which version at the earliest reasonable moment, with due regard to conservatism, will in my experience bring better results as regards lowered infant morbidity and mortality and maternal morbidity. These cases are recognizable by the character of the labor, the peculiar advance and retreat of the head, and the peculiar consecutive findings in the cervix as labor progresses.

These cases may present for the first time in labor with the head well engaged, with pelvic measurements ample, and position normal. However, it soon becomes apparent that the head does not make a progressive descent, nor is the dilatation of the cervix progressive and the pains are irregular to a marked degree in frequency, severity and duration. One rectal examination may show the head halfway down to the spines, the cervix dilated four or five fingers and well effaced. At the next examination, a few hours later, you will be astonished to find the head higher in the pelvis, dilatation of the cervix apparently less and effacement less manifest. At subsequent examinations these findings will alternate. These are the cases that experience has taught me to follow with especial care, with the definite aim of not allowing conditions to obtain that would render version and breech extraction impossible or unusually difficult. Were these heads to remain continuously high or floating, the indications for possible version would be obvious and we would seldom be led astray. The apparent ease with which the head reaches nearly or even to the spines leads one to feel that soon the head will descend to the floor, dilatation will be complete and normal delivery or delivery

with low forceps will eventuate. Possibly one ruptures the membranes feeling that that may hasten the process to the benefit of the mother. Yet these patients may go on in labor for days and make no progress. You are sure of your measurements and sure of your diagnosis of presentation and position. Finally, because of signs of severe fatigue on the part of the mother, not avoidable by constant attention to nourishment, rest and analgesics, or because of signs of fetal distress, you prepare the patient for intervention, and what do you encounter? You feel a cuff of soft cervix, but as you examine the head to check up on your rectal findings, the head retreats up the pelvic canal upon the slightest pressure, and before you know it you have a very high or floating head, and you find the cervix completely dilated but hanging down at the sides of the head like the edges of an open bag, presenting a condition that has been called a concealed second stage of labor. Now if one reviews his previous rectal findings, he will realize that this stage had been reached hours before, and he had failed to recognize it. At that time the membranes may have been intact or possibly not long ruptured, and mother and child in excellent condition. The failure in recognizing the concealed second stage of labor in time may have rendered version unsafe or impossible, and high forceps the only recourse.

Though it is obvious that the relative fetal morbidity and mortality consequent upon the use of high forceps or version and breech extraction will vary according to the relative expertness of the operator in the two maneuvers, it is my opinion that, with equal expertness in both maneuvers, high forceps is more dangerous than version and breech extraction, when the latter is not definitely contraindicated. These are the cases that to my mind bring up the average of success in the hands of the extremists in version. In the hands of the extremists in version, such cases never materialize because version is performed as soon as conditions make it possible and their only difficulties are the results of the well known hazards of version and breech ex-

*Presented at the meeting of the Minnesota Society of Obstetricians and Gynecologists, January 16, 1937.

traction in point of infection and trauma, which hazards under perfect surroundings and in the hands of experts are not so great as the unskilled would believe and yet so great, even with experts, that to my mind version should never take the place of normal delivery or low forceps when the latter can reasonably be predicted and haste is not imperative.

Some of the causes of the type of labor under discussion can only be conjectured. We are quite sure of the frequent factors of the imperfect rotation, extension, and deflections of the head. The attitude of the upper extremities of the fetus may sometimes be a factor. In regard to the cervix it is likely that the position and attitude of the child so affects, by pressure, the innervation and musculature of the lower part of the uterus that contraction above the head is permitted before the external os is retracted beyond palpation from below. As this phenomenon may not occur in a subsequent labor, or may not have occurred in a previous labor, it cannot reasonably be explained by any abnormality in the uterus itself save in the case of later development of fibromyomata.

If one will follow his patients in labor with the entity under discussion continuously in mind, one will seldom be misled. Whenever in this type of labor a concealed second stage is suspected, one should prepare the patient for a vaginal examination with everything ready for immediate version and breech extraction if the condition is found and there are no contraindications.

There are a few very important points in the technic of successful version and breech extraction that one should keep constantly in mind, which cannot be reiterated too frequently in societies such as this: Do not attempt version and breech extraction until the patient is under deep anesthesia and you have thoroughly tested the complete dilatation of the cervix with your fist and spread fingers. If the uterus is found to be even slightly constricted above the head, give one or two hypos containing one cubic centimeter each of 1:1500 adrenalin solution.

See to it that if any constriction above the head exists, you push the head well up in the main cavity before you attempt the version. The head can be held up and to the side by a hand on the abdomen until you have successfully pull-

ed down the legs past the head and ease of progress in traction satisfies you that version is complete. Take plenty of time and be as gentle as possible in swinging the baby around in version and pulling the foot or feet past the head. Before attempting to deliver the trunk, see that the back faces the operator.

Splint the thighs on the pelvis with the hands in delivering the trunk and first shoulder.

When the umbilicus is delivered, pull down a loop of cord.

Before delivery of the arms, do not allow any pressure on the abdomen, as such pressure seems to increase the frequency of the arms being extended behind the head.

Attempt the delivery of the anterior shoulder first by gentle traction of the splinted thighs toward the floor. The anterior shoulder will usually slip out under the symphysis pubis, and the arm is easily extracted. As regards the posterior shoulder and arm, many of us feel that there is less danger of twisting the neck if we reach in posteriorly and deliver the shoulder and arm posteriorly than if we rotate the body and attempt delivery by traction as with the first shoulder. The maneuver of delivering arms extended behind the head by inserting the fingers back of each arm in turn and sweeping each arm in turn across the face and down and out, is sometimes a most difficult procedure and one will do well to visualize the technic frequently and practice it on a mannikin. After the delivery of the arms, never allow the body of the baby to hang without support. Continually keep in mind the fact that the baby is in a position similar to a man with a noose around his neck, and that any jerking and any immoderate tension from below or quick angulation of the body on the head will likely bring about injuries similar to those sustained in hanging.

Give the Mauriceau-Smellie-Veit maneuver a gentle trial, with a good assistant adding pressure from above in the direction of the pelvic canal. On no account use much force from below, and, above all, do not get excited and twist and jerk the body. If unusual resistance is encountered, have your assistant keep the spine taut and support the body of the baby above the operator's line of vision into the vagina, retract the perineum with a wide retractor so that air can get to the baby's mouth, and then by direct

vision apply forceps to the aftercoming head. No haste is needed after the baby can get air. Take plenty of time and remember that every move should aim at protecting the head and neck of the baby from trauma in the process of extraction. Though forceps are seldom needed, they at times make all the difference between success and failure and should always be at hand. The most easily applied forceps for this purpose are the Piper aftercoming head forceps; but the Tarnier axis traction forceps are just as efficient and almost as easy to apply.

The possible difficulty of extracting the head due to perineal resistance should be clearly visualized at the start, and the perineum prepared before version by a thorough ironing out, plus episiotomy if indicated.

Both from the standpoint of asepsis and greater ease in consummating version, the long elbow rubber glove should be used.

In the endeavor to obtain an approximate estimate of what is deemed to be the indicated frequency of use in the conservative application of version and breech extraction, I append the results of 1,000 labors in one hospital, labors for which I was entirely responsible from beginning to end.

These figures are only suggestive, both because it is a small series and because in the last analy-

sis, as mentioned before, one's relative expertness with high forceps or version and breech extraction will always be a large factor in determining results. Six of these versions were performed successfully after careful trial by forceps seemed to warrant their discontinuance. Personally, I feel more sure of a successful outcome where version and breech extraction is performed before high forceps becomes imperative, and every case is conducted with a view to not allowing, if possible, the labor to go to the point where version is definitely contraindicated.

Total fetal mortality.....	3.2 %
Corrected fetal mortality.....	1.9 %
Total versions and breech extractions.....	4.7 %
Fetal mortality in version and breech extraction.	8.05%
Total high forceps.....	1 %
Fetal mortality in high forceps.....	30 %

With due attention to proper nourishment, rest and analgesics, if labor shows progress, the length of labor *per se*, to my mind, should offer no indication for interference. I do not believe, however, that a woman should be allowed to stay in the second stage of labor, whether frank or concealed, much over two hours without intervention, unless progress is so obvious that one can reasonably predict that possibly a mid-forceps or only a low forceps will be necessary if definite indications for intervention arise in mother or child.

OBSTETRICAL ANALGESIA

A Preliminary Report Of A New Method

F. E. KLIMAN, Ph.C., B.A., M.D., and E. M. LAZARD, M.D., F.A.C.S.
Los Angeles, California

IN 1923 Gwathmey⁶ set out to develop a combination of synergistic drugs to produce painless childbirth. He sought to produce relaxation and analgesia with *little impairment* of consciousness, thus enabling the patient to cooperate at all times. As a result of his work there came into being the "Ether-Oil Method," bearing his name.

Since that time various drug combinations and methods have been tried. Allonal, phenobarbital, nembutal, amytal, dial, et cetera, have been used alone or in combination with hyoscine, morphine, pantopon, paraldehyde, and ether. The fact that there are so many methods indicates that the

ideal one has not been found, and that each method has its drawbacks.

A satisfactory drug combination should not delay labor, nor harm mother or baby. It should entail the use of the smallest amount of drug to produce the maximum effect without impairment of the bodily functions after delivery of the patient.

Furthermore, the method should be simple, eliminating special apparatus. The drugs used should be in convenient form for administration and easily obtained. The patient should be manageable and not require a corps of nurses in con-

stant attendance to keep her from falling or getting out of bed.

In the past three or four years the popularity of the barbiturates has increased because of the claims made as to their harmlessness in obstetrics. In therapeutic doses the effect on mother and child is not harmful but, as a review of the literature indicates, the amount of drugs used in the various methods advocated allows for a greater dose of the drugs than our pharmacologists consider as therapeutic.

Sollmann,⁸ for example, states that sodium pentobarbital should not be given orally in larger amounts than 3 to 7.5 grains and yet many have advocated the use of nembutal up to 9 grains or more.

Bundesen,² in his survey of infant mortality within thirty days of delivery, blames the improper use of analgesics for a share of the infant deaths.

One of the main drawbacks in the use of the barbiturates has been the extreme restlessness caused particularly when large doses are used. It is not our purpose to add another method of analgesia to the list merely as such. We do believe, however, from our experience over a two year period, that we have a method that has given satisfactory results from the standpoint of safety, alleviation of pain and fear, and particularly in the diminution of restlessness.

Before outlining our method and the reason for choosing it, we will review briefly the work of others.

In a recent article Gwathmey and McCormack⁷ described their modified technic for "Ether-Oil Rectal Analgesia in Obstetrics." It is noteworthy that they now use sodium pentobarbital by mouth as a preliminary to the instillation of their rectal mixture of ether.

Tritsch and Brown⁹ in their report on the use of the barbiturates in primiparous labors came to the following conclusions:

1. Barbiturates used alone are of less value for relief of pain during labor and for production of amnesia than when combined with other drugs.
2. Barbiturates combined with sedative or amnesia-producing drugs appear to accentuate and prolong their action.
3. Labors are shortest in patients in whom the greatest degree of analgesia and amnesia were observed.
4. Ether per rectum used in conjunction with barbiturates appears to delay labor.

5. Barbiturates are excitants in 25 per cent of all cases and this condition is aggravated by the use of another excitant such as scopolamine, and lessened by morphine or pantopon.

6. Apnea in infants is more common when barbiturates are used during labor and is aggravated when pantopon is used in addition.

Our experiences have been in many respects in accord with the work of Tritsch and Brown.⁹ Charles Gould and B. C. Hirst,⁵ in reply to a questionnaire sent to twenty-four clinics, arrived at the following conclusions:

1. Pentobarbital sodium, with or without scopolamine, is the most frequently used barbiturate.
2. A large initial dose of pentobarbital sodium with or shortly followed by an injection of scopolamine, which is repeated as necessary, seems to be preferred to frequently small doses of barbiturate.
3. The usual dose of barbiturate given is 4 to 6 grains, but as much as 7.5 grains is given at the first dose.
4. Most clinics do not combine morphine with the barbiturates and one specifically mentions the increased danger of respiratory depression and also feels the use of the barbiturates is contraindicated in cardiac patients because restlessness increases the strain on the heart.
5. Increased fetal asphyxia was reported by one clinic following the use of barbiturates.

Galloway and Smith,³ in their report of almost 1,500 cases in which scopolamine and pentobarbital was used for the relief of pain during labor, gave an average of 9.03 grains of pentobarbital sodium to primiparæ. The first dose was generally 7.5 grains. The largest dose given in their series was 22.5 grains.

In multiparæ the average dose of pentobarbital sodium given was 8.07 grains. *They noted that the majority of their patients were restless during pains, especially during the last part of the first stage and the second stage of labor. They did not attach much importance to the restlessness as long as the patients received proper and constant nursing care. They also employ a nurse as soon as the first dose of the drug is given and until the patient is awake and rational. Five of their patients were found out of bed after it was deemed safe to leave them. Three of their cases developed aspiration pneumonia; 44 per cent of their cases were catheterized in the puerperium on an average of five to eight days.*

From their last report they concluded that they were successful in allaying pain in labor in 93.6 per cent of their cases by the use of pentobarbi-

TABLE I.

EFFECT C.N.S.	HYOSCINE Excitement then depression of motor division of brain, me- dulla, cord.	CALC. BROMIDE Depression of cerebrum, me- dulla, spinal reflexes.	SECONAL AND PENTOBARBITAL SO- DIUM Depression of forebrain, me- dulla, cerebrum and lastly on cord.
UNSTRIPED MUSCLE	Less responsive Spasm lessened	Not affected	Antispasmodic
RESPIRATION	Slowed	Larger doses slow, centric action	Larger doses depress, cause irregularity
BLOOD PRESSURE	Little altered	Not affected	Lowered in larger doses
EXCRETION	Destroyed in tissues	Lungs, skin, urine, feces, etc.	Destroyed in tissues not excreted in urine
ALIMENTARY TRACT	Vagus depression; lessened se- cretions and activity	Large doses irritate	Large doses delay motility and emptying
SECRETORY GLANDS	Depressed	Sweat glands depressed	Renal depression due to B.P. fall
METABOLISM	Increased	Phosphates reduced, chlorides displaced	Large doses depress glycogen and sugar assimilation
LOCAL ACTION	Sensory endings in skin depressed	None	None
SPECIAL ACTION	Increased tendency to bladder paresis	Diuretic by salt action	Relieves bronchial and ureteral spasm

tal sodium and scopolamine. They admit, however, that the operative incidence is increased because of failure of coöperation on the part of the patient because of the drugs.

From the above mentioned, both the good and bad effects resulting from various drug combinations can be evaluated.

We believe that in using comparatively small doses of the barbiturates we have overcome many of the bad effects, particularly the restlessness. We do not feel that a patient has to be knocked-out completely to obtain the desired effect. Although patients appear to be suffering they do not remember the events preceding delivery. We have yet to see apnea in a baby as a result of the analgesia.

In our series of 421 cases we have used sodium amytal, phenobarbital, seconal, and pentobarbital sodium. We have had the opportunity to compare our series of cases with those cases on the services where Gwathmey rectal analgesia, paraldehyde, and other methods were used. We have used our method both on private and clinic patients where the analgesia could be

controlled and given at the right time (private cases), and where patients were brought in hurriedly (clinic cases). With this information we were able to compare and evaluate the various methods used and the varied conditions under which they were used.

To better understand the rationale of our method, the pharmacological action of the drugs in our combination is outlined and summarized in the accompanying table and diagrams.

Bromides

Bromide action is due mainly to the Br ion. While other bromide salts may contain more actual bromide, we use the calcium salt because it is less irritant and because the depressant effect of the Ca ion is helpful in allaying restlessness. Bromides do not enforce sleep but permit sleep through the elimination of excessive worry, restlessness, etc. The excretion of the bromides is mainly in the urine and excretion depends a good deal on diuresis. Calcium bromide is somewhat diuretic in action, hence there is more rapid elimination of this salt. It is a well known fact that

the administration of chlorides hastens the excretion of bromides and that bromide retention effects are increased in chloride-poor diet. In toxemia or nephritic cases where chloride dimin-

Let us consider the action of *barbiturates* in general. The most noticeable physiologic effect of the barbiturates is the depression of the central nervous system, which results in anesthesia

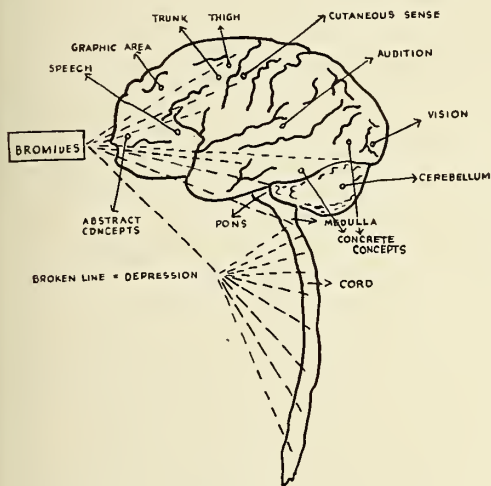


Fig. 1.

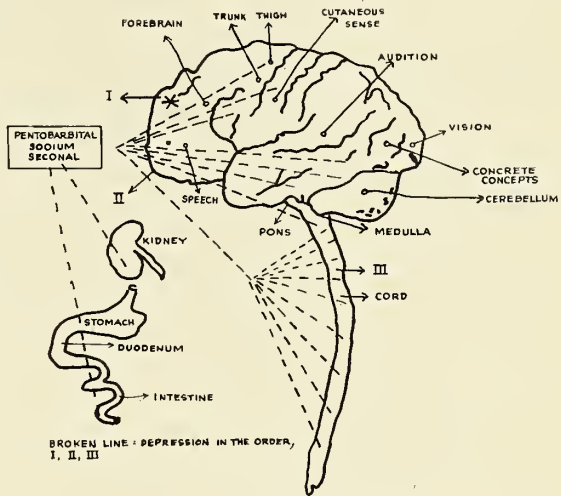


Fig. 2.

tion is part of the treatment, the bromide effect can be produced with a minimum of drug.

Since intravenous administration of glucose in saline is often given in difficult cases postpartum and postoperatively, one can, by this means, and at will, rid the body of bromides without complicating the treatment, as excretion of bromides is dependent on diuresis and glucose solutions produce diuresis.

In practice we have had less catheterizations to perform postpartum.

As to the dose of bromide used, Sollman says a single dose of 1 or 2 grams of the bromides has no noticeable action on normal individuals. Above 4 grams, depression and decrease of reflexes becomes apparent. The amount of calcium bromide we use is within the 4 gram limit and yet in combination with the barbiturates it does decrease the reflexes, causes mental calm and imperturbability progressing to lack of attention.

Barbiturates

Hirschfelder noticed that if an animal was frightened before the administration of the barbiturates, the effect was not as satisfactory as in the cases where the animals were calm before the administration of the drug.

The administration of the bromides in our method seems to quiet the patient and probably accounts for some of the success.

and sleep. Summed up, small doses are sedative on the higher cerebral centers, larger doses produce sleep, while still larger doses are anesthetic in action. The hypnotic action is exerted chiefly on the thalamus and corpus striatum. If sufficient barbiturate is given alone to produce a hypnotic effect, this effect is often preceded by considerable excitement, inebriation, and even delirium.

Respiration and Circulation.—The effect on respiration and circulation varies with the dose of the drug given. Small doses cause slight slowing of respiration, but blood pressure is not affected. In larger doses there is depression of the respiratory centre with reduction of depth and rate. Often there are irregularities in respiration and lowering of the blood pressure.

Temperature and Metabolism.—In small doses there is no effect on temperature or metabolism. Larger doses, however, may cause a fall in both, and in still larger doses there is interference with glycogen and sugar assimilation.

Action on smooth muscle.—Small doses have no significant effect on muscles and contractions of the parturient uterus are not affected. In larger doses the motility and emptying time of the stomach and intestines is markedly delayed due to the antispasmodic effect of the drug.

Action on the kidneys.—With therapeutic doses the output of urine is diminished, and

with larger doses anuria may occur because of the fall in blood pressure.

Sodium pentobarbital, according to Bachem (quoted by Sollman),⁸ yields a depressant sub-

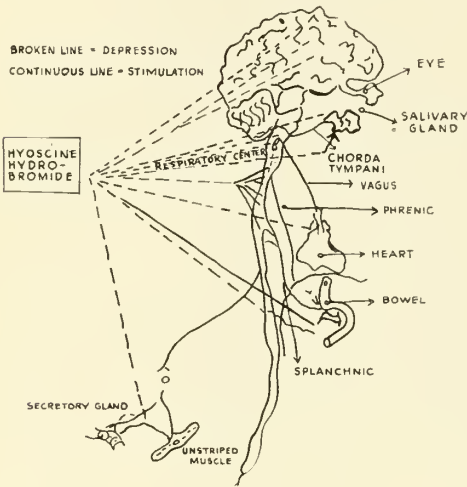


Fig. 3.

stance in the urine. The percentage of excretion of barbital is in inverse proportion to the dose. While barbital and phenobarbital are eliminated mainly in the urine, seconal and sodium pentobarbital are destroyed in the liver and oxidized in the body.

Hyoscine Hydrobromide

Central nervous system.—Hyoscine produces a depression of the motor divisions of the brain, thence the medulla and cord. Often there is a stage of delirium and excitement.

Unstriated muscle is made less responsive and spasm is lessened.

The respiratory rate is slowed.

The heart rate may remain normal or become slower due to its hypnotic action.

Blood pressure is altered very little.

The eye shows a mydriasis and loss of accommodation.

The secretions of the alimentary tract are lessened and activity is diminished because of a depression of terminal filaments of the vagus.

The secretory glands are depressed.

Metabolism is increased by hyoscine and the drug is excreted or destroyed in the tissues.

Temperature is often elevated possibly due to centric action.

The sensory nerve endings in the skin are depressed.

Having described the action of the bromides, barbiturates, and hyoscine, we will now proceed to outline our method of analgesia and amnesia for obstetrical patients.

When the patient enters the hospital and all preliminary preparations have been made, we ascertain whether she is in labor and what progress she had made. She is advised that she will not be allowed to suffer and can have something for pain, as soon as she desires. We try to start analgesia when the cervix is dilated 3 to 4 cm. and pains are regular at five minute intervals, but where the patient is nervous or restless, we give 2 drams of an elixir containing 15 grains of calcium bromide to the dram. This usually allays apprehension and, if no vomiting takes place, one-half hour later the patient is given $4\frac{1}{2}$ grains of pentobarbital sodium (three capsules with ends pierced by needle). If the cervix is dilated 4 cm. or better we give $1/200$ grain of hyoscine fifteen minutes later. There is no repetition of the hyoscine, but should the labor be prolonged we give another $1\frac{1}{2}$ grains of pentobarbital sodium and 1 dram of the elixir. It is rarely necessary to repeat the medication in the average case. The patients moan occasionally and there is a tendency on the part of the nurse or interne to suggest repetition of the medication. A check on patients after delivery has proven to us that most of our patients have no recollection of having moaned or suffered after medication was started, yet they are coöperative before the inhalation anesthetic is started. In those cases where hyoscine was repeated, the patients became very restless. Large doses of barbiturates caused the same results. Where a patient vomits the medication, we repeat it.

We are now working on a single capsule which will contain both the bromide and the pentobarbital sodium and which will release them for action at the desired time. If the patient vomits such a capsule, it will be easy to administer another and know exactly what dose of drug the patient has retained.

Some patients reach the hospital well advanced in labor and require some medication. We have found that 3 capsules of seconal plus 2 drams of the elixir takes care of the situation. We do not use hyoscine in these cases. The seconal acts more rapidly than the pentobarbital sodium and is rapidly eliminated.

We also use 2 seconal capsules and 2 drams of

the elixir in primiparæ where we know the patient to be highly nervous and labor has just begun. These patients receive the usual combination of bromide, hyoscine, and sodium pentobarbital, when the cervix is dilated 4 cm. or more. Seconal and pentobarbital are compatible. We have used as much as 7.5 grains of seconal in several of our test cases without harm to mother or baby.

Elimination of fear is followed by more pronounced action of the barbiturates.

Our results have been satisfactory in 90 per cent of our combined private and clinic patients. If cases are selected our successes exceed that figure. Small women, under 100 pounds, have been carried through on 3 grains of pentobarbital sodium plus the bromide and hyoscine in the usual dose.

Clinical Observations

Barbiturates are not strong analgesics when given alone in moderate doses. Pain produces restlessness when small doses are given alone. Marked restlessness is apt to occur even in the absence of pain when large doses of barbiturates alone are given. If hyoscine is added these patients are even more restless.

The administration of sufficient barbiturate to produce complete analgesia or amnesia carries the risk of producing respiratory and vascular depression.

Debilitated individuals, cardiac patients, those with upper respiratory infections, tuberculosis, or anemia, stand the barbiturates poorly.

Large doses of barbiturates have a tendency to abolish the pharyngeal reflex. Accordingly, if a patient is anesthetized on a full stomach, aspiration pneumonia is more likely to occur.

The marked restlessness produced by large doses of barbiturates adds further strain to an already damaged heart.

If scopolamine is repeated in cases where large

doses of barbiturate have been given, the restlessness becomes more marked.

Shifting from one procedure to another and using many drugs in the same patient, as a rule proves unsatisfactory.

Summary

1. We present here a preliminary report of a modified analgesia for obstetrical patients.
2. In our hands the method has been satisfactory from the standpoint of mother and baby.
3. We use simple drugs in small doses, and no complicated apparatus for their administration.
4. Our cases required no extra nursing care.
5. The number of postpartum catheterizations have been reduced considerably.
6. We expect to simplify the method further by using a single capsule containing the bromide and barbiturate, each drug to be released at the proper time.

NOTE: We owe our thanks to the Eli Lilly Company, to Dr. G. Rosenblum, Dr. A. Webb, and Dr. M. Z. Siltan, for their cooperation in making this study possible.

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THE INCIDENCE OF TUBERCULOSIS AND THE DEEP CHEST*

S. A. WEISMAN, M.D.

Minneapolis, Minnesota

IN a previous study on the contour of the chest according to environment, it was shown that children from better socio-economic districts had on the average a flatter type of chest, were taller, and weighed more than children from poorer socio-economic environments.¹ Other studies made on the shape of the normal and tuberculous chests showed that the average tuberculous chest is deep and narrow, and the healthy chest is flat.^{2,3} Therefore, since the children from the poorer districts have on the average the deep type of chest, one similar to the type of chest found in the average tuberculosis patient, there should be a higher incidence of tuberculous manifestations in the children from these districts. The purpose of this report is to show that tuberculosis is much more prevalent among the deep-chested children.

The children from the Minneapolis school districts that were used in a previous report were also used for this study.¹ The school districts representing the better groups were the Field, John Burroughs, Calhoun, and Sydney Pratt. Those representing the poorer school districts were the Summer, Harrison, Jackson, and Washington. The records of the Minneapolis Health Department for the years 1931-32 were carefully examined for cases of some form of tuberculosis that were recorded from these school districts. These were compared. (Graph 1).

There were forty-two reported cases of tuberculosis from the better districts, representing a school population of 1,171 children, an incidence of 3.58 per cent. There were seventy-one cases reported from the poorer school districts representing a school population of 855 children, an incidence of 8.30 per cent, over this two year period. That is, there were over twice as many reported cases of some form of tuberculosis from the poorer districts, where the deeper type of chest prevailed, than there were from the better school districts.

However, when the number of cases from the best school district (John Burrough School) was compared with the number of cases from the poorest school district (Sumner School) the difference was most significant. There were five reported cases from the best district, representing a school population of 231, an incidence of 2.16 per cent, as compared with thirty-two reported cases from the poorest school district, representing a school population of 158, an incidence of 20.25 per cent. In other words, there were almost ten times as many cases of reportable types of some form of tuberculosis from the deep-chested children from the slums of Minneapolis, than there were

TABLE I. INCIDENCE OF TUBERCULOSIS IN POORER SCHOOL DISTRICTS

1931—figures in light face type
1932—figures in bold face type

Girls 36
Boys 35

	Sumner	Harrison	Jackson	Washington		
Age	M. F.	M. F.	M. F.	M. F.	Total	1931 1932
5	1 1		1 1	1	5	5
6	1 1 1	1		1	5	1 4
7	1	1	1	1	4	3 1
8	1 1		1		3	1 2
9	2 2	1 1	1 2	1	10	7 3
10	1		1		2	1 1
11	2 1	1 2	1	1 1	9	4 5
12	1		1	1	3	2 1
13	1 1 3	1 2	1		9	5 4
14	1 1	1 1 1 1	1		7	3 4
15	1 2 1	1			5	2 3
16	1 1 1	1	1 1		6	3 3
17	1		1		2	1 1
18				1	1	1
					71	33 38

*From the Department of Medicine, University of Minnesota, and Glen Lake Sanatorium, Oak Terrace, Minnesota. Abstract presented before The Central Society for Clinical Research, Chicago, Nov. 7, 1936.

TUBERCULOSIS AND THE DEEP CHEST—WEISMAN

TABLE II. INCIDENCE OF TUBERCULOSIS IN BETTER SCHOOL DISTRICTS

1931—figures in light face type
1932—figures in bold face type

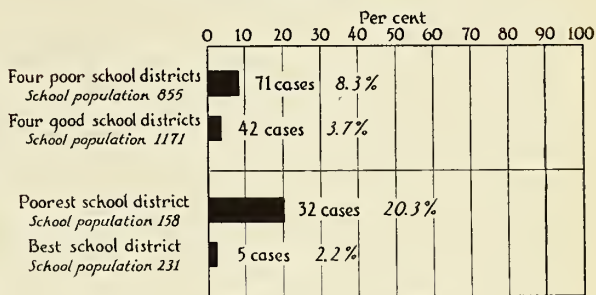
Girls 27
Boys 15

	Pratt	Cal-houn	Field	Bur-roughs		
Age	M. F.	M. F.	M. F.	M. F.	Total	
					1931	1932
6		1	1		2	2
7		1	1		2	2
8	1 1	1 1			4	1 3
9			1 1	1	3	1 2
10		1 1	1 1		4	2 2
11		1			1	1
12	1 1	1		1	4	2 2
13	2	1 1	1		5	2 3
14		1 1	1		3	2 1
15		1 1	1	2	5	3 2
16	1 4	1			6	1 5
17	1	1		1	3	2 1
					42	21 21

among the flat-chested children from the best school district in Minneapolis.

It is well known that there is much more tuberculosis among the poor. Poor hygiene, lack of proper foods, and poor housing conditions play a very important part in disseminating tuberculosis. Poor hygiene, food, and ventilation also lead to under-developed children. These children have on the average not only a deeper chest, but they are also lighter in weight and shorter in height. The underde-

Incidence of Tuberculosis in relation to Socio-economic Environments
1931 - 1932



Graph 1.

veloped deep chest and body are the soil in which the tubercle bacillus can best thrive.

In many large cities the government is wiping out the slum districts and replacing them with modern, well built, and ventilated homes. This is a very constructive, far-reaching piece of work, and will go far in reducing the incidence of tuberculosis. Then in the future, we will probably find a better developed child in these districts, a child who is not only taller and heavier than the average child in the slums now, but one with a flatter type of chest; and in all probability there will be a marked decrease in the incidence of tuberculosis.

We of the medical profession can advance to our aim of eliminating tuberculosis by acquainting the public with the part slums play in the fostering of this disease.

Conclusion.—There is reason to believe that there is a definite positive correlation between tuberculosis and the deep chest.

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"DR. O'BRIEN SPEAKING"

WILLIAM A. O'BRIEN, M.D.

Associate Professor of Pathology, University of Minnesota

"Be not thy tongue thy own shame's orator."—*Comedy of Errors*, Act III, Sc. 2.

GOOD speakers are made—not born. Without exception, they like to talk and know the rules. All of them realized early in their careers that if they wanted to make good speeches they had to make an effort to do so. They never stop experimenting with their technique because good speech is an art which can be developed. Physicians must be prepared to express their ideas to others. As with other professional groups, we have a considerable number of good speakers and those who do not do so well. If anyone has any reason to doubt his speech ability, he should first admit his deficiencies and then try to correct them. As a general rule, the better the speaker the more conscientious he is in attempting to improve his speech. Some of the suggestions which follow may be helpful—at least, I have found them so.

The subject of a talk is most important. When you are invited to speak, it is assumed that you have something to offer. The same is true if you request an opportunity to be heard. It is best to select a simple subject upon which you have a certain amount of information. It is not wise to try to speak about something upon which your information is very meager at the time. It is much better to listen to others under such circumstances. Too often we hear physicians say that they got a great deal out of preparing a talk even if no one did from listening to them. I believe this is the wrong attitude. The subject we select should be pretty well in hand before we offer it to a program committee.

Every speech should have a purpose. After you have selected your subject, being guided by the type and interests of your audience, write down in a few words the reason for your selection. Just because you have observed something which is uncommon in your experience is a very poor reason for giving a talk. As a general rule, it is not wise to take up your audience's time with a new procedure of diagnosis or treatment too early in its development. You may indicate in a few words that you are interested in such an idea but never make it the subject of an address. Medicine slowly changes back and forth. The best subject for the average man to attempt is some common condition. In it, he should correlate his own experience with that of others. It is assumed that his audience knows a considerable amount about his subject. His hope is to bring their knowledge up to date by various additions and subtractions to current concepts. This type of talk is always good. If you have made a real discovery, then by all means report it, but this does not happen very often.

The next step is to outline your speech. Select from four to six points that you would like to make and stick to them. Too many speakers copy textbook outlines which are intended for an entirely different purpose. It is very disheartening to an audience to listen to a speaker try to condense everything known about a complicated subject into a fifteen minute period. After they have made their outline, some speakers write their entire speech at once. Most lecturers, however, find it more desirable to write their speeches after they have spent most of their time thinking over the points they intend to make. Even though one may speak for an hour, it is not wise to attempt more than the usual four to six points. In enlarging your speech, be sure that your audience does not lose your main points.

Extemporaneous speech is the ideal form. The word is often misunderstood as it is confused with impromptu speech. Extemporaneous speech means "speech delivery out of the moment." It is thinking on our feet

as the result of long and adequate preparation. It is not memorized speech. Preparing a speech is a thinking process of high order. It requires sustained effort and mental concentration. On rare occasions a manuscript should be read. Even though a manuscript is required for future publication, it is unfair to an audience to have them sit and listen to something which they can later read in a medical journal. What we should do is develop the ideas we have written in our article and present them to the audience. We analyze an article when we read it, therefore the only reason for reading a paper in advance of publication is to attempt to give the personal touch to our views. A lecture has been defined as a personality plus a textbook; a medical paper should be a personality plus a manuscript.

Most good speakers are not orators. They follow the conversational mode which is effective speech in any situation. A person who is a good conversationalist with very little change in his technique can become a good speaker. In conversation, we do not speak in a monotone or continue after it is very obvious that our listeners are becoming bored. We vary our voices as to quality and rate of utterance, and we watch our listeners to see if they are interested. The old rule that it does not make any difference if it is five people or five thousand that we are addressing is still good. The first training in improving our speech method is to attempt to improve our conversational ability.

Do not try to be funny. The average speaker imagines that he must start with a story but finding a good story that just fits the occasion is an undertaking beyond the scope of most of us. If your story is very good and well told, it may hurt you rather than help you. If your story is poor, it is giving yourself an unnecessary handicap. Most stories have been heard by the average man in one form or another. There are only a few basic situations about which stories are built and these have become familiar to most of us by the time we have reached our majority. A speaker with a real sense of humor is another matter. He understands the necessity of holding his audience's interest by taking advantage of humorous situations as they arise. Humor is the association of disassociated ideas or the dissociation of associated ideas. It is necessary to break the tension of your audience from time to time. This can be done by introducing "asides" and not using so-called "prepared wit." It is not wise for a professional man to get a reputation as a story-teller while delivering scientific papers as his audience will be more apt to remember the story than his message.

Avoid an extravagant style of speaking. Use short, simple sentences. If you find yourself in an involved statement, it is best to stop and start over. Many speakers bury their thoughts in a barrage of words loosely coupled together in long meaningless sentences. We should attempt to make comprehension easy—not difficult. It is up to the audience to get our meaning at once or not at all. Do not be afraid to use personal pronouns freely. After all, we want the speaker's viewpoint as in most instances we have ideas of our own. One of the most effective teachers I have ever known used personal pronouns freely and never left his audience in doubt as to his views on the subject under discussion. Whether you agreed with him or not, at least you knew how he felt about it when he was through.

All good speakers are nervous at the start and I might add that they never completely conquer this feeling if they continue to be effective. If you start with-

any feeling of apprehension as to the result, you probably do not know what is meant by the speech situation. In every speech situation, there are two parties—the person speaking and the persons addressed. The only reason for communicating our ideas to others is to attempt to influence their behavior. The average man is nervous because he realizes the responsibility of the situation for he does not care to have the reputation of simply speaking to be heard without offering anything to his audience. If one is well-prepared and has thought out his message in advance, he should be able to drop his nervousness as soon as he starts. Relax the muscles and voice as soon as possible by concentrating on putting over your ideas. A sincere, original, lively speaker with a pleasant voice will always be heard and given a chance to tell his views.

Never apologize at the beginning of a speech. If you feel that your effort is not to be your best, it is too late to make amends. In the average case, sufficient time has elapsed to make proper preparation for your effort. If you have done this, there is nothing to apologize about. Practically all the apologies offered at the beginning of a speech are egotistical in nature. Suppose there are those rare souls who are really so modest that they must express their feeling of humility in taking up our time. I am sorry to say, however, that the average apologetic medical speaker is apparently not of this variety.

Never thank your audience when you finish. This is a necessary ending in certain situations but not at the end of a medical address. Again, I am afraid this is an expression of egotism or an old-fashioned custom. We thank a medical audience when we take up their time or present to them an idea or a proposition which is contrary to the usual order of business. If our medical talk has been worth while, the audience should thank us for our efforts in their behalf. This may seem like a small matter, but it is the little things which make the difference between a good talk and one which is not so good.

Every age has a certain contribution to make. Young men adopt a different technique than older men. The average medical student today has plenty of experience in presenting case histories. The history, physical and laboratory examinations of a senior medical student represent a unique contribution to medical literature because of his unbiased observations. In correlating necropsy findings with case records, the senior medical students' notes are usually best for comparison. It takes time and experience for younger men to crystallize their ideas on diagnosis and treatment. The average medical society overlooks a very good source of program material by not using its younger men for case reports and case studies. These should be followed by discussions by older men who are able to interpret this material on the basis of their broader experience. At the weekly Staff Meetings of the University of Minnesota Hospitals, we rely almost exclusively on our younger men to prepare the material for the meetings and on our more experienced staff men to discuss the conclusions. It is also to be remembered that many of our younger men have had a great deal of experience in specialized fields while doing graduate work or working in clinics and hospitals while waiting for their private practices to develop. With advancing years, our desirability as a program contributor often decreases. What this age is varies a great deal. Many of our older men retain their ability to exhibit critical judgment on medical problems up to advanced years; others seem to lose it earlier in life. When it is lost, it is a peculiar combination of lack of interest in change and dwelling in the past.

Most of us offend by failing to speak clearly and loudly enough to be heard. We should form our vowel sounds in the mouth, never the nose or throat. If we

wish to be heard in a large crowd, we should put on the power from deep down in our chest in the diaphragmatic region and relax our throat. Good speakers usually have powerful chests and have cultivated breath control. Too often we hear a man mumbling away upon the platform as if by some magical means we could find out what he was trying to say. The front third of an audience, especially if it is seated in a long room, should be made more or less uncomfortable so that the listeners in the back of the room will be able to hear without effort.

Distinct speech results when sounds are formed in the mouth. It is impossible to be heard distinctly if the tones are developed high in the head or back in the throat and if we launch them through the nose. The four rules of pure and distinct speech are: First, use the entire mouth in speaking, sound the front vowels at the front of the mouth, the middle vowels at the middle, and the back vowels at the back. Second, learn to give diphthongs two shapes of the mouth in speaking. Third, learn to make short sounds short and long sounds long. Fourth, generate all powerful speech in the diaphragm. Unsatisfactory voice placement is usually the result of lip and jaw laziness and substitution of the nose for the vocal cords. Radio announcers of the large chain programs, as a general rule, speak distinctly. You have heard your radio announcer say, "This is the Columbia Broadcasting System, many times without realizing the technique he uses. Repeat after him the statement until you can say it like he does and then analyze what you are doing. The English language requires sixteen separate vowel sounds and each one demands a distinct and separate shape of the mouth. Most indistinct speakers use only seven or eight mouth shapes.

Use illustrations freely. Some speakers can actually paint pictures with words. Scientific men should be able to explain what they mean. There are times, however, when lantern slides should be used. If you are going to talk about the lantern slides, speak with the lights out and move right along with your discourse. A good example is the use of illustration in Dermatology and Radiology where the slides are the main feature. If you are only using a few slides or an assorted group, it is much better to show them at the beginning or at the end of your talk. If charts are used, the lettering should be large enough to be read from the back of the room.

Beware of using complicated statistics. It is surprising how few people can understand statistical presentations. It is much better to condense your material into conclusions of the simplest sort and serve your more complicated tables for the printed article. While the details of arriving at your conclusions may be fascinating to you, it is to be recalled that you have spent a great deal of time studying them before your talk. In the short amount of time your audience has to see them, it is difficult for them to get the same information from your charts that you do. I would not have you believe that statistics are not necessary or should be avoided but they should be of the simplest variety and represent conclusions rather than the complicated details leading up to these conclusions.

What is the secret of talking to non-professional groups about scientific matters? The answer is very simple for all that you have to do is to put yourself in the place of the audience. It is the same situation that we would be in if we were listening to something about which we had very little knowledge or none at all. Physicians speaking to non-professional groups should never have to apologize for their inability to explain their ideas or for the use of difficult scientific terms. They should never get into a dilemma where they have to explain their way out but rather they

should anticipate the point ahead. I realize that this is difficult but we should never give the audience the impression that we are condescending. Simple, dignified, sympathetic speech should always be employed and every statement weighed in advance to avoid misinterpretation. In spite of your best efforts, you will fail but do not worry too much about this as the main purpose of such discussions is to interest the listener and make him want to know more about the subject. Their own physicians are in the best position to answer the questions which naturally arise following your talk.

Beware of sarcastic remarks. Speeches composed of ridicule are effective only for partisan groups. Little is gained by such an approach when dealing with a non-partisan audience. Physicians do more harm than good when they ridicule those with whom they do not agree when addressing lay audiences. The same statement applies equally well when addressing scientific groups. For, after all, scientific men should be openminded and the presentation of facts, not ridicule, should be our method of discussion.

Impromptu speeches usually represent our poorest effort. Poor discussions always result when impromptu speech is employed. Those who are to discuss papers should have an opportunity to see them in advance and then they should not repeat what has been said except by way of emphasis. If they have nothing to offer, they should not say so and then make a speech. If they have something to say, they should say it and then sit down. It is not necessary in discussing a paper to make effusive complimentary remarks no matter what the merits of the offering. Chairmen should avoid impromptu introductions of speakers. Always check your notes with the speaker in advance to avoid embarrassing under- or over-statements of his connections or qualifications. Speakers in acknowledging introductions should also use a very simple form. There are formal occasions in which a more elaborate reply is appropriate but for the average medical audience the reply to the chairman's introduction should be of the simplest type. And speaking of introductions, the more prominent the speaker the shorter the introduction. Most people know this so that a long introduction is rarely considered complimentary.

There are many advantages of speech training. It disciplines one in the art of thinking, helps form correct habits of speech, extends one's sphere of influence, develops the ability to speak in public, aids in social adjustment and makes for better citizenship. You can improve your speech by studying theory, examining model speeches and by practice. Do not worry too much about whether or not you have made good in your effort. Every speech accomplishes something. It is either informative, impressive or entertaining. Good speeches are a combination of all three of these features.

Ending a speech is an art. The best time to stop is when you are supposed to or when your audience is getting bored. There is very little excuse for going on when your audience has left you. When either time comes, summarize in a few words the main points that you hope you have made and then sit down. While it may be a pleasant surprise when you stop suddenly, there is little to be said in favor of this method of ending a talk. Give your audience a few minutes warning that you are soon to finish so that they may relax with you. When you get up to speak, you may think the situation is new and novel but it has happened thousands of times before. Most good speakers would rather speak than do anything else. If you do not feel this way about it, you had better ask yourself how you can improve your speech technique for, after all, we are social beings and like the approval of our fellow men.—*Bulletin of the Hennepin County Medical Society*, 7:85, (Aug. 25) 1936.

A WORD FOR HONEST DOUBT

Once a nation is persuaded that it is ill, receptivity lay and professional diagnoses of its malaise become the rule and acceptance of novel treatments the fashion. Every theory of every man or woman who would do the world a good turn is actively promoted as prescription for the public good. Customary vigilance and common sense go off duty. Hopeful panaceas slumber under the big emergency tent without challenge.

Now that the depression is history, and recovery a current fact, sponsors of any amendment to the American way of life should be willing to walk up to the main entrance and show their credentials. Proof of every assertion should be forthcoming and a cautious rather than casual weighing of cost, human as well as money, should be made. Plans offered for national acceptance should be solid enough to withstand a wholesome skepticism articulated in the public interest. Those who plead for a change from this and that to that and this, on the ground that their measure has been successful in a foreign land, should bear the burden of proof. Advocacy of drastic institutional reformings solely by the argument that the workable precedent has long been established in England, Germany, Sweden or Russia is a commonplace. A high official chided us recently for having been "a backward nation, twenty-five years behind Germany in social security." As more and more is heard in Washington of "extensions" to the Social Security Act, in the form of health insurance, the device of cross-examination might be usefully applied to this proposal:

- Q.—Is it or is it not a fact that sickness insurance in Germany has
 - (1) created a scandal in the large amount of funds used for administration?
 - (2) increased the number of sick days per year from 5% to 28 (in England since compulsory health insurance from 9 to 12½), while in the United States the percentage has not increased over the same period?
- Q.—Is it or is it not a fact that state health insurance in Germany and England has shortened life expectancy, increased infant mortality, in striking contrast to the experience of the United States?
- Q.—Is it or is it not a fact that authentic studies show that in any comparison between compulsory health nations and the United States, on death rate, on diseases subject to human control the odds are all in favor of the private medical practice here?
- Q.—Is it or is it not a fact that medical science has advanced more slowly, that medical practice has become more of drudgery in those countries which enjoy state medicine?
- Q.—Is it or is it not a fact that there is grave doubt that the investigations of personal life necessary to proper administration of health insurance by a political agency, while tolerated in Europe, would be resented here?

* * *

These questions are not captious. They are suggested by an editorial study of security measures abroad. They are submitted in a desire to get at the truth, to find the quickest and soundest way to bring greater protection for the individual against the vicissitudes of life.

Were a questioning state found directed toward similar measures which well meaning protagonists would transplant from other countries, the consequences of their establishment here could be a matter of demonstrable expectation rather than progressive experimentation. The housing experience of the British government for example, the coöperative "successes" of England, Sweden and Denmark, the various forms of industrial control in Italy; price-fixing, state unemployment agencies, public works and "five-year" plans in one country and another. All that's necessary today to get a nod of approval, it seems, is to lug in a foreign country as reference. To hold an honest skepticism, to insist upon details of practice abroad does not take the position that nothing good can come from an alien way of life. Rather, it approaches questions, which involve a fundamental change in the America of which we are only temporary trustees, with the same careful regard that the people give matters of fundamental personal concern.—MERLE THORPE in *Nation's Business*, March, 1937.

EDITORIAL

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BUSINESS MANAGER

J. R. BRUCE

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The A.M.A. Meeting

THE House of Delegates of the American Medical Association was confronted with some most important matters at its meeting held in Atlantic City last month. No one realizes better than the medical profession the problem of making adequate medical care available to the lower income group of citizens not indigent but on the other hand not financially competent to meet unusual medical costs. The problem is—what is the best way to solve the difficulty?

The delegates from the New York Medical Society presented a resolution to the House of Delegates of the American Medical Association for action by that body which embodied most of the economic problems confronting the practice

of medicine today but which went rather far in its recommendations for government subsidy. The resolution called attention to the necessity for local, state and federal assistance to supplement the present efforts of the medical profession in supplying medical care to the people. It specifically proposed an extension of local, state and federal activities directed toward prevention of disease, providing such action meets the approval of the local medical profession and provided it utilizes as far as possible the private practitioner; that private funds be available for the care of the medical indigent, for the support of medical education and research, for the assistance of hospitals that render service to the medical indigent, and for laboratory and consultation service. Public funds should preferably be allocated to existing private institutions, depending on local needs to be determined by the local medical profession. Local county and state medical societies shall select "experts" to carry out the proposals. A further proposal was the consolidation of all the health activities of the Federal government under one department. The conviction was also expressed that compulsory health insurance would not solve the problem.

The Reference Committee of the House of Delegates to which this resolution was referred called attention in its report to the fact that the Board of Trustees had already recommended to the President of the United States the consolidation of all health activities of the federal government except those pertaining to the Army and Navy. It was felt that national health activities are important enough not to be subservient to any other department and should be headed by a trained physician; that now when governmental departments are undergoing re-organization is the logical time to establish a United States Health Department. Such action should serve economy by avoiding duplication.

The Reference Committee reported that where-as the medical profession had always been willing to give its services to the indigent, it recognizes that there is a group of citizens not indigent and yet not competent financially to meet unusual medical costs and that the profession is willing to con-

sider with other agencies ways and means of providing service and laboratory facilities for those not able to meet the full cost, but that the problem is local and state and not federal. The willingness of the profession to adjust its services is not in any sense of the word to be construed as an endorsement of compulsory or voluntary health insurance as a means of meeting the situation. The facilities of the American Medical Association are placed at the disposal of the government or any qualified agency in an effort to work out a solution of difficulties.

The report of the Reference Committee after being adopted by the House of Delegates thus became the action of that body.

The attitude of the profession can thus be construed to be a willingness to coöperate with the federal government in every way by putting the facilities of the Association, including its records, reports and source material, at the disposal of the government. The profession does not feel inclined to "create a group which shall formulate the principles and proposals of a national health policy to be submitted to the government." It does, however, strongly recommend the formation of a United States Health Department headed by a trained physician to supervise all the health activities of the federal government. The profession feels the medical care of the citizens is a local and state problem rather than a federal one. Medical problems vary considerably in different localities. The profession reiterates its conviction that state health insurance would not solve the problem. It does not feel disposed to recommend the expenditure of public funds for "medical indigents" and various medical activities to the extent proposed by the New York delegates. In working out methods of providing medical care not for the indigent, who are rather well provided for, but for the "medical indigent" unable to meet the full cost of medical care, the organized profession is willing and ready to coöperate with any governmental or other qualified agency.

The day following this action taken by the House of Delegates, the delegates listened to an address by J. Hamilton Lewis, Senator from Illinois, and chairman of the sub-committee on social legislation of the Senate. He stated that federalization of medical practice is inevitable and that radical proposals are about to be made

in Congress. According to him the proposal about to be made that the Federal Government examine every physician in the country to ascertain his right to practice under Federal law; that the Government is about to say that it knows nothing about the existence of the patient—a fictitious invention of the doctors—but only of the citizen who is essential to the welfare of the government in a civil and military way. His speech must have suggested that our government has adopted the philosophy attributed to the German government at the time of the World War. Those who may have been alarmed by this address must have felt reassured by the reported repudiation of his ideas by the President.

Nearly 10,000 physicians attended the meeting in Atlantic City and the total registration amounted to about 18,000. Of interest to Minnesota physicians was the award of the Gold Medal in Class I for the best scientific exhibit to Leonard G. Rountree and his associates of the Philadelphia Institute for Medical Research and A. M. Hanson of Faribault for their exhibit illustrating original investigation on normal and abnormal growth associated with the development of sarcoma in albino rats from the ingestion of a crude wheat germ. Particular commendation was made of the personal demonstration by Edward C. Rosenow of the Mayo Foundation of his exhibit on the relation of streptococci to the viruses of encephalitis and poliomyelitis. In Class II the gold medal went to M. S. Henderson and his associates of the Mayo Clinic for their fracture exhibit. John Lundy and his associates received honorable mention in this class for their demonstration of the technique of regional anesthesia.

The following officers were elected: J. H. Upham, Columbus, Ohio, president; Irvin Abel, Louisville, president-elect; Junius B. Harris, Sacramento, vice president; Olin West, Chicago, secretary; H. L. Kretschmer, Chicago, treasurer. Nathan B. Van Etten, New York, was re-elected speaker of the House of Delegates, and H. H. Shoulders, Nashville, vice speaker. Dr. R. S. Sensenich, South Bend, Indiana, was elected a member of the Board of Trustees to succeed Dr. Rock Sleyster, who retires this year. Dr. Arthur W. Booth, Elmira, N. Y., was re-elected for a term of five years.

Birth Control

OME months ago the National Committee on Federal Legislation for Birth Control forwarded to medical journals the report of a decision of the U. S. Circuit Court of Appeals for the second circuit which denied the right of the government to seize some contraceptive essaries shipped from Japan to an American physician. The decision was hailed by the committee as a bill of rights for the medical profession and inasmuch as the case was not carried to the Supreme Court the Committee claims the decision becomes the law of the land and that physicians may give contraceptive advice in private practice and in public clinics. The fact is that this has been going on for some time with an uncertainty in the minds of many as to whether it is legal or not. The decision mentioned does not materially alter the present legal status of contraceptives. In a nutshell, the decision construed the tariff law of 1930 as not including the importation of contraceptives for the use of physicians for the purpose of saving lives or promoting the well being of their patients.

At the recent meeting of the American Medical Association the Committee on Contraceptive Practices recommended that the Association investigate the various forms of contraception, promote the teaching in medical schools of proper methods of birth control and make clear to physicians their legal rights in relation to their use.

The adoption of the report, which simply recognized contraceptive procedure by the House of Delegates, led to a protest meeting by seventy-five members of the Federation of Catholic Physicians' Guilds, at which those attending vigorously refused "to aline themselves with any doctors who by adherence to pagan philosophy, and even by their action, attempt to make the medical practitioner the grave-digger of the nation."

It seems as though such a protest was unnecessary. Contraception is generally practiced. Most people believe that it is not well for a woman to have offspring as often as is physiologically possible and that continence is not the answer as a means of prevention.

Observation of the "safe period," although not frowned upon by such groups as the Catholic Church, is not very practicable for general application and has the same purpose as contraceptives.

There is reason to believe that contraceptive measures will lessen the enormous traffic in illegal abortions, known to exist, which results in so many tragedies to wives who become desperate on finding themselves pregnant. The abuse of contraceptives by those who indulge in illicit intercourse cannot be prevented, but contraceptives are not 100 per cent effective and the likely consequences of sex immorality still constitute a deterrent. Contraceptives do not alter the definition of good morals.

It is argued that contraception will theoretically result in national suicide. We doubt it. The desire to have children is deep rooted. Physicians are beset by many who wish to have children and cannot. The fact that the demand for children for adoption exceeds the supply is one proof of the general feeling that a home is not complete without one or more children. The encouragement of propagation by several governments and the natural growth of population in other countries have resulted in overpopulation, which has undoubtedly been one cause of war. The slaughter of millions in war is certainly a poor method for controlling population.

One main objection to contraception would seem to be that it is more likely to be applied by those with the greater intelligence and will result in a restriction in the increase of the more desirable members of society. Certainly there is need for the scientific application of contraception from the standpoint of eugenics.

Contraception has come to stay. It is being backed by outstanding members of society interested in social betterment. It is not a subject that lends itself to graceful public discussion, but publicity seems necessary in bringing out public sentiment on any subject. Inasmuch as there are medical indications for the prevention of conception, the medical profession is the logical agency for giving such information in private or clinic practice.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

At Atlantic City

NINETY-EIGHT thousand doctors met for the annual convention of the American Medical Association at Atlantic City in June.

It was the greatest medical meeting in history and the most momentous, probably, so far as medical policies and the future relations of medicine are concerned.

Further comment on the social and economic aspects of the actions taken at this meeting will appear in these columns next month.

The principal actions taken by the House of Delegates at this meeting were, first, the rejection of the plan proposed by the Medical Society of the State of New York for a widespread extension of medical care for the indigent to be paid for out of Federal funds. A resolution was substituted re-affirming previous action by the Board of Trustees asking for a consolidation of health activities of the government under the direction of a physician and not "subservient to any charitable conservatory or other government interest." It also re-affirmed the willingness of the American Medical Association, upon request, to coöperate with any government or other qualified agency in making available the information, observations and results of investigation together with any facilities of the association.

Another action taken by the House of Delegates was a liberalization of the policy of the American Medical Association previously adopted with regard to birth control. By this action, although birth control is not recognized or endorsed by the Association, efforts will be made to determine the most acceptable procedures and their medical aspects.

President Roosevelt sent what was generally taken to be a personal message to the delegates by United States Senator J. Hamilton Lewis, asking the medical profession to coöperate with him in the solution of medical problems within such provinces as the medical profession felt the

government should undertake. The message came within a few hours after the declaration by the delegates that the American Medical Association "stands ready to coöperate upon request."

According to the *New York Times'* commentator, William L. Laurence, the message could be regarded as a sign that the Administration will lose no time in availing itself of the American Medical Association's offer.

Said the last issue of *Time*:

"This (the substitute resolution passed by the delegates) simply meant that Orthodox Medicine had succeeded in delaying matters until it could feel how the wind was blowing in Washington and arrange to fly in President Roosevelt's slip-stream. . . .

"In Washington, President Roosevelt gently intimated that Senator Lewis was not the President's spokesman in matters medical, that the White House at this time contemplates no federalization of medicine. But Senator Hugo La Follette Black of Alabama re-introduced a resolution for the Senate's Labor Committee, of which he is chairman, to 'investigate or recommend legislation to provide a national public health policy.' When such a resolution was first presented to the Senate A. M. A. lobbyist Woodward got it squelched. 'Now,' said Senator Black, 'the Association seems ready to coöperate.'"

New Legislation

The Legislature of the State of Minnesota at the 1937 regular session passed an amendment to the Liquor Control Act of Minnesota in reference to the prescribing of liquor by a physician; that amendment is published herewith.

The Legislature also enacted a so-called uniform Narcotic Act which concerns the physicians of this State in the prescribing of narcotics in their practice of medicine. The full text of the new law appears at the end of this report.

It is recommended that each physician read over both of these laws in order that the provisions will be known to those who are subject to these statutes.

As this is written the Legislature is in special session, but it is considered unlikely that any medical legislation will be enacted. The purpose

calling the Legislature in special session was consider appropriations for relief and education, and to consider revenue raising measures to finance these and other expenses of government.

Committee on Public Policy,

By L. L. SOGGE, M.D.,

Chairman

CHAPTER 418—S. F. No. 497

A BILL

FOR AN ACT to amend Extra Session Laws of 1933-34, Chapter 46, Section 12, relating to the sale of intoxicating liquors for medicinal purposes.

Be it enacted by the Legislature of the State of Minnesota:

Section 1. That Extra Session Laws of 1933-34, Chapter 46, Section 12, be amended so as to read as follows:

Section 12. The provisions of this Act shall not apply to medicines as defined herein nor to industrial alcohol designed for mechanical, chemical, scientific, pharmaceutical or industrial purposes, nor to compounds or preparations containing alcohol, if such medicines, compounds or preparations are not potable as a beverage.

It shall be lawful for any duly licensed and registered pharmacist or druggist within this state to make sales of intoxicating liquor for medicinal purposes upon bona fide prescriptions by a physician, dentist, or veterinarian, written in ink, without having obtained an "Off sale" license. Such prescription shall state the name and address of the person for whom the same is prescribed, the kind and quantity of liquor, and such prescription shall be signed in ink by the physician, dentist or veterinarian issuing the same, and shall bear the date of its issuance and delivery. No more than one quart of liquor may be sold upon any one prescription, and no prescription shall be relied more than once, nor after the expiration of one month from the date of its issuance and delivery. No physician, dentist or veterinarian shall prescribe for or issue or deliver to any person, nor shall any person receive more than one prescription for intoxicating liquor within any period of ten days. The container of intoxicating liquor so sold shall bear the prescription number.

Every prescription upon which any sale of intoxicating liquor is made, as herein provided, shall, at the time of such sale, be taken from the purchaser of the intoxicating liquor by the seller thereof, and by such seller cancelled by writing in ink across the face of such prescription over his signature, the words: "Cancelled, this — day of —, 19—," stating the date, and such prescription shall be kept by the seller until filed by him with the Liquor Control Commissioner within thirty days after such prescription has been issued.

Such pharmacist or druggist must first obtain, however, a special permit from the Liquor Control Commissioner, which permit shall be issued annually at a cost of \$5.00. Said permit shall be revoked by the Commissioner for any violations of this law. Any person applying for or obtaining a prescription under this Act must give his own true name to the physician, dentist or veterinarian and it shall be unlawful for such physician, dentist or veterinarian to knowingly insert a false name in such prescription.

Approved April 24, 1937.

CHAPTER 74—H. F. No. 442

A BILL

FOR AN ACT defining and relating to narcotic drugs to make uniform the law with reference thereto and repealing Mason's Minnesota Statutes of 1927, Sections 10453, 10454, 10455, 10455-1, 10455-2 and 10455-3, and all acts amendatory thereof and supplemental thereto, except Chapter 321, Session Laws of 1935, together with all other acts and parts of acts inconsistent herewith.

Be it enacted by the Legislature of the State of Minnesota:

Section 1. The following words and phrases, as used in this Act, shall have the following meanings, unless the context otherwise requires:

(1) "Persons" includes any corporation, association, co-partnership, or one or more individuals.

(2) "Physician" means a person authorized by law to practice medicine in this state and for the purposes of this Act only, any other person author-

ized by law to treat sick and injured human beings in this state and to use narcotic drugs in connection with such treatment.

(3) "Dentist" means a person authorized by law to practice dentistry in this state.

(4) "Veterinarian" means a person authorized by law to practice veterinary medicine in this state.

(5) "Manufacturer" means a person who, by compounding, mixing, cultivating, growing, or other process, produces or prepares narcotic drugs, but does not include an apothecary who compounds narcotic drugs to be sold or dispensed on prescriptions.

(6) "Wholesaler" means a person who supplies narcotic drugs that he himself has not produced or prepared, on official written orders, but not on prescriptions.

(7) "Apothecary" means a licensed pharmacist as defined by the laws of this state and, where the context so requires, the owner of a store or other place of business where narcotic drugs are compounded or dispensed by a licensed pharmacist; but nothing in this act shall be construed as conferring on a person who is not registered nor licensed as a pharmacist any authority, right, or privilege, that is not granted to him by the pharmacy laws of this state.

(8) "Hospital" means an institution, where the sick and injured receive care and treatment, approved by the department of health of the State of Minnesota as proper to be entrusted with the custody of narcotic drugs.

(9) "Laboratory" means a laboratory approved by the department of health as proper to be entrusted with the custody of narcotic drugs and the use of narcotic drugs for scientific purposes.

(10) "Sale" includes barter, exchange, or gift, or offer therefor, and each such transaction made by any person, whether as principal, proprietor, agent, servant, or employee.

(11) "Coca leaves" includes cocaine and any compound, manufacture, salt, derivative, mixture, or preparation of coca leaves, except derivatives of coca leaves which do not contain cocaine, ecgonine, or substances from which cocaine or ecgonine may be synthesized or made.

(12) "Opium" includes morphine, codeine, and heroin, and any compound, manufacture, salt, derivative mixture, or preparation of opium, but does not include apomorphine or any of its salts.

(13) "Narcotic drugs" means coca leaves, opium, and every substance neither chemically nor physically distinguishable from them.

(14) "Federal Narcotic Laws" means the laws of the United States relating to opium, coca leaves, and other narcotic drugs.

(15) "Official written order" means an order written on a form provided for that purpose by the United States Commissioner of Narcotics, under any laws of the United States making provision therefor, if such order forms are authorized and required by federal law, and if no such order is provided, then on an official form provided for that purpose by the department of health of the State of Minnesota.

(16) "Dispense" includes distribute, leave with, give away, dispose of, or deliver.

(17) "Registry number" means the number assigned to each person registered under the Federal Narcotic Laws.

Section 2. It shall be unlawful for any person to manufacture, possess, have under his control, sell, prescribe, administer, dispense, or compound any narcotic drug, except as authorized in this act.

Section 3. No person shall manufacture, compound, mix, cultivate, grow, or by any other process produce or prepare narcotic drugs, and no person as a wholesaler shall supply the same, without having first obtained a license so to do from the said department of health, provided, however, that no such license shall be required of the University of Minnesota, nor any college approved by the University of Minnesota, in the manufacturing, compounding, mixing, cultivating, growing, producing and preparing of narcotic drugs for educational and scientific purposes only.

Section 4. No license shall be issued under the foregoing section unless and until the applicant therefor has furnished proof satisfactory to said department of health:

(a) That the applicant is of good moral character or, if the applicant be an association or corporation, that the managing officers are of good moral character.

(b) That the applicant is equipped as to land, buildings, and paraphernalia properly to carry on the business described in his application.

No license shall be granted to any person who has within five years been convicted of any willful violation of any law of the United States, or of any state, relating to opium, coca leaves, or other nar-

cotic drugs, or to any person who is a narcotic drug addict.

The department of health of the State of Minnesota may suspend or revoke any such license for cause.

Section 5.

(1) A duly licensed manufacturer or wholesaler may sell and dispense narcotic drugs to any of the following persons, but only on official written orders:

- (a) To a manufacturer, wholesaler, or apothecary.
- (b) To a physician, dentist, or veterinarian.
- (c) To a person in charge of a hospital, but only for use in that hospital.

(d) To a person in charge of a laboratory, but only for use in that laboratory for scientific purposes.

(2) A duly licensed manufacturer or wholesaler may sell narcotic drugs to any of the following persons:

(a) On a special written order accompanied by a certificate of exemption, as required by the Federal Narcotic Laws, to a person in the employ of the United States Government or of any state, territorial, district, county, municipal, or insular government, purchasing, receiving, possessing, or dispensing narcotic drugs by reason of his official duties.

(b) To a master of a ship or a person in charge of any aircraft upon which no physician is regularly employed, for the actual medical needs of persons on board such ship or aircraft, when not in port. Provided: Such narcotic drugs shall be sold to the master of such ship or person in charge of such aircraft only in pursuance of a special order form approved by a commissioned medical officer or acting assistant surgeon of the United States Public Health Service.

(c) To a person in a foreign country if the provisions of the Federal Narcotic Laws are complied with.

(3) An official written order for any narcotic drug shall be signed in duplicate by the person giving said order or by his duly authorized agent. The original shall be presented to the person who sells or dispenses the narcotic drug or drugs named therein. In event of the acceptance of such order by said person, each party to the transaction shall preserve his copy of such order for a period of two years in such a way as to be readily accessible for inspection by any public officer or employee engaged in the enforcement of this act. It shall be deemed a compliance with this subsection if the parties to the transaction have complied with the Federal Narcotic Laws, respecting the requirements governing the use of order forms.

(4) Possession of or control of narcotic drugs obtained as authorized by this section shall be lawful if in the regular course of business, occupation, profession, employment, or duty of the possessor.

(5) A person in charge of a hospital or of a laboratory, or in the employ of this state or of any other state, or of any political subdivision thereof, and a master or other proper officer of a ship or aircraft, who obtains narcotic drugs under the provisions of this section or otherwise, shall not administer, nor dispense, nor otherwise use such drugs, within this state, except within the scope of his employment or official duty, and then only for scientific or medicinal purposes and subject to the provisions of this act.

Section 6.

(1) An apothecary, in good faith, may sell and dispense narcotic drugs to any person upon a written prescription of a physician, dentist or veterinarian, dated and signed by the person prescribing on the day when issued and bearing the full name and address of the patient for whom, or of the owner of the animal for which, the drug is dispensed, and the full name, address, and registry number under the Federal Narcotic Laws of the person prescribing. If he is required by those laws to be so registered. If the prescription be for an animal, it shall state the species of animal for which the drug is prescribed. The person filling the prescription shall write the date of filling and his own signature on the face of the prescription. The prescription shall be retained on file by the proprietor of the pharmacy in which it is filled for a period of two years, so as to be readily accessible for inspection by any public officer or employee engaged in the enforcement of this act. The prescription shall not be refilled.

(2) The legal owner of any stock of narcotic drugs in a pharmacy, upon discontinuance of dealing in said drugs, may sell said stock to a manufacturer, wholesaler, or apothecary, but only on an official written order.

(3) An apothecary, only upon official written order, may sell to a physician, dentist, or veterinarian, in quantities not exceeding one ounce at any one time, aqueous or oleaginous solutions of which the content of narcotic drugs does not exceed a propor-

tion greater than twenty per cent of the complete solution, to be used for medicinal purposes.

Section 7.

(1) A physician or a dentist, in good faith and in the course of his professional practice only, may prescribe, administer and dispense narcotic drugs, or he may cause the same to be administered by a nurse or interne under his direction and supervision.

(2) A veterinarian, in good faith and in the course of his professional practice only, and not to be used by a human being, may prescribe, administer and dispense narcotic drugs, and he may cause them to be administered by an assistant or orderly under his direction and supervision.

Section 8. Except as otherwise in this act specifically provided, this act shall not apply to the following cases:

(1) Prescribing, administering, dispensing or selling at retail of any medicinal preparation that contains in one fluid ounce, or if a solid or semi-solid preparation, in one avoirdupois ounce, (a) not more than two grains of opium, (b) not more than one quarter of a grain of morphine or of any of its salts (c) not more than one grain of codeine or of any of its salts, (d) not more than one-eighth of a grain of heroin or of any of its salts, (e) not more of any combination of the drugs named above than a quantity that does not exceed in pharmacologic potency any of such drugs named in clauses (a), (b), (c) and (d).

(2) Prescribing, administering, dispensing, or selling at retail of liniments, ointments, and other preparations, that are for external use only and that contain narcotic drugs in such combinations as prevent their being readily extracted from such liniments, ointments or preparations, except that this act shall apply to all liniments, ointments, and other preparations, that contain coca leaves in any quantity or combination.

The exemptions authorized by this section shall be subject to the following conditions:

(a) No person shall prescribe, administer, dispense, or sell under the exemptions of this section to any person, or for the use of any one person or animal, any preparation or preparations included within this section, when he knows, or can by reasonable diligence ascertain, that such prescribing, administering, dispensing, or selling will provide the person to whom or for whose use, or the owner of the animal for the use of which, such preparation is prescribed, administered, dispensed, or sold, within any 48 consecutive hours, with more than four grains of opium, or more than one-half grain of morphine, or of any of its salts, or more than two grains of codeine or any of its salts, or more than one-quarter of a grain of heroin or of any of its salts, or will provide such person or the owner of such animal, within 48 consecutive hours, with more than one preparation exempted by this section from the operation of this act.

(b) The medicinal preparation, or the liniment, ointment, or other preparation for external use only, prescribed, administered, dispensed, or sold, shall contain in addition to the narcotic drug in it, some drug or drugs conferring upon it medicinal qualities other than those possessed by the narcotic drug alone. Such preparation shall be prescribed, administered, dispensed, and sold in good faith as a medicine, and not for the purpose of evading the provisions of this act.

Nothing in this section shall be construed to limit the kind and quantity of any narcotic drug that may be prescribed, administered, dispensed, or sold, to any person or for the use of any person or animal, when it is prescribed, administered, dispensed, or sold in compliance with the general provisions of this act.

Section 9. (1) Every physician, dentist, veterinarian, or other person who is authorized to administer or professionally use narcotic drugs, shall keep a record of such drugs received by him, and a record of all such drugs administered, dispensed, or professionally used by him otherwise than by prescription. It shall, however, be deemed a sufficient compliance with this subsection if any such person using small quantities of solutions or other preparations of such drugs for local application, shall keep a record of the quantity, character, and potency of such solutions or other preparations purchased or made up by him, and of the dates when purchased or made up, without keeping a record of the amount of such solution or other preparation applied by him to individual patients.

Provided: That no record need be kept of narcotic drugs administered, dispensed, or professionally used in the treatment of any one patient, when the amount administered, dispensed, or professionally used for that purpose does not exceed in any forty-eight consecutive hours, (a) four grains of opium, or (b) one-half a grain of morphine or of any of

or salts, or (c) two grains of codeine or of any of its salts, or (d) one-fourth of a grain of heroin or any of its salts, or (e) a quantity of any other narcotic drug or any combination of narcotic drugs that does not exceed in pharmacologic potency any one of the drugs named above in the quantity stated.

(2) Manufacturers and wholesalers shall keep records of all narcotic drugs compounded, mixed, cultivated, grown, or by any other process produced or prepared, and of all narcotic drugs received and disposed of by them, in accordance with the provisions of subsection 5 of this section.

(3) Apothecaries shall keep records of all narcotic drugs received and disposed of by them, in accordance with the provisions of subsection 5 of this section.

(4) Every person who purchases for resale, or who sells narcotic drug preparations exempted by section 8 of this act, shall keep a record showing the quantities and kinds thereof received and sold, or disposed of otherwise, in accordance with the provisions of subsection 5 of this section.

(5) The form of records shall be prescribed by the department of health of the State of Minnesota. The record of narcotic drugs received shall in every case show the date of receipt, the name and address of the person from whom received, and the kind and quantity of drug received; the kind and quantity of narcotic drugs produced or removed from process of manufacture, and the date of such production or removal from process of manufacture; and the record shall in every case show the proportion of morphine, cocaine, or ecgonine contained in or producible from crude opium or coca leaves received or produced. The record of all narcotic drugs sold, administered, dispensed, or otherwise disposed of, shall show the date of selling, administering, or dispensing, the name and address of the person to whom, or for whose use, or the owner and species of animal for which the drugs were sold, administered or dispensed, and the kind and quantity of drugs. Every such record shall be kept for a period of two years from the date of the transaction recorded. The keeping of a record required by or under the Federal Narcotic Laws, containing substantially the same information as is specified above, shall constitute compliance with this section, except that every such record shall contain a detailed list of narcotic drugs lost, destroyed, or stolen, if any, the kind and quantity of such drugs, and the date of the discovery of such loss, destruction, or theft.

Section 10.

(1) Whenever a manufacturer sells or dispenses a narcotic drug, and whenever a wholesaler sells or dispenses a narcotic drug in a package prepared by him, he shall securely affix to each package in which that drug is contained a label showing in legible English the name and address of the vendor and the quantity, kind, and form of narcotic drug contained therein. No person, except an apothecary for the purpose of filling a prescription under this act, shall alter, deface, or remove any label so affixed.

(2) Whenever an apothecary sells or dispenses any narcotic drug on a prescription issued by a physician, dentist, or veterinarian, he shall affix to the container in which such drug is sold or dispensed, a label showing his own name, address and registry number, or the name, address, and registry number of the apothecary for whom he is lawfully acting; the name and address of the patient, or, if the patient is an animal, the name and address of the owner of the animal and the species of the animal; the name, address, and registry number of the physician, dentist, or veterinarian, by whom the prescription was written; and such directions as may be stated on the prescription. No person shall alter, deface, or remove any label so affixed.

Section 11. A person to whom or for whose use any narcotic drug has been prescribed, sold, or dispensed, by a physician, dentist, apothecary, or other person authorized under the provisions of Section 5 of this act, and the owner of any animal for which any such drug has been prescribed, sold or dispensed, by a veterinarian, may lawfully possess it only in the container in which it was delivered to him by the person selling or dispensing the same.

Section 12. It shall be the duty of all peace, police officers, sheriffs and county attorneys to enforce the provisions of this act.

On complaint before any court having jurisdiction charging any person with manufacturing, selling or keeping or having in his possession any narcotic drugs in violation of the provisions of this act, and particularly describing the premises or place, the court in addition to issuing a warrant for the arrest of such person shall upon request issue a search warrant commanding any officer to search such premises or place and to seize and hold, subject to the order of

the court, all narcotic drugs found therein, any of which is apparently kept, had or possessed, or manufactured or sold in violation of any of the provisions or part of the constitution or law of this state or of the United States relating to narcotic drugs and to make an inventory of the same and to serve a copy thereof forthwith on the defendant or person in charge of the premises, provided, however, that the failure to make, file or serve any such inventory shall not invalidate or in any way affect the legality of any search or seizure or proceeding made or had under the provisions of this act.

Section 13. The provisions of this act restricting the possession and having control of narcotic drugs shall not apply to common carriers or to warehousemen, while engaged in lawfully transporting or storing such drugs, or to any employee of the same acting within the scope of his employment; or to public officers or their employees in the performance of their official duties requiring possession or control of narcotic drugs; or to temporary incidental possession by employees or agents of persons lawfully entitled to possession, or by persons whose possession is for the purpose of aiding public officers in performing their official duties.

Section 14. Any store, shop, warehouse, dwelling house, building, vehicle, boat, aircraft, or any place whatever, which is resorted to by narcotic drug addicts for the purpose of using narcotic drugs or which is used for the illegal keeping or selling of the same, shall be deemed a common nuisance. No person shall keep or maintain such a common nuisance.

Section 15. All narcotic drugs, the lawful possession of which is not established or the title to which cannot be ascertained, which have come into the custody of a peace officer, shall be forfeited and disposed of as follows:

(a) Except as in this section otherwise provided, the court or magistrate having jurisdiction shall order such narcotic drugs forfeited and destroyed. A record of the place where said drugs were seized, of the kinds and quantities of drugs so destroyed, and of the time, place and manner of destruction, shall be kept and a return under oath, reporting said destruction, shall be made to the court or magistrate and to the United States commissioner of narcotics, by the officer who destroys them.

(b) Upon written application by the state department of health, the court or magistrate by whom the forfeiture of narcotic drugs has been decreed may order the delivery of any of them, except heroin and its salts and derivatives, to said state department of health, for distribution or destruction, as hereinafter provided.

(c) Upon application by any hospital within this state, not operated for private gain, the state department of health may in its discretion deliver any narcotic drugs that have come into its custody by authority of this section to the applicant for medicinal use. The state department of health may from time to time deliver excess stocks of such narcotic drugs to the United States commissioner of narcotics, or may destroy the same.

(d) The state department of health shall keep a full and complete record of all drugs received and of all drugs disposed of, showing the exact kinds, quantities, and forms of such drugs; the persons from whom received and to whom delivered; by whose authority received, delivered, and destroyed; and the dates of the receipt, disposal, or destruction, which record shall be open to inspection by all federal or state officers charged with the enforcement of federal and state narcotic laws.

Section 16. On the conviction of any person of the violation of any provision of this act, a copy of the judgment and sentence, and of the opinion of the court or magistrate, if any opinion be filed, shall be sent by the clerk of the court, or by the magistrate, to the board or officer, if any, by whom the convicted defendant has been licensed or registered to practice his profession or to carry on his business. On the conviction of any such person, such board or officer may, in its discretion, suspend or revoke the license or registration of the convicted defendant to practice his profession or to carry on his business. On the application of any person whose license or registration has been suspended or revoked, and upon proper showing and for good cause said board or officer may in its discretion, reinstate such license or registration.

Section 17. Prescriptions, orders, and records, required by this act, and stocks of narcotic drugs, shall be open for inspection only to federal, state, county, and municipal officers, whose duty it is to enforce the

laws of this state or of the United States relating to narcotic drugs. No officer having knowledge by virtue of his office of any such prescription, order, or record shall divulge such knowledge, except in connection with a prosecution or proceeding in court or before a licensing or registration board or officer, to which prosecution or proceeding the person to whom such prescriptions, orders, or records relate is a party.

Section 18.

(1) No person shall obtain or attempt to obtain a narcotic drug, or procure or attempt to procure the administration of a narcotic drug, (a) by fraud, deceit, misrepresentation, or subterfuge; or (b) by the forgery or alteration of a prescription or of any written order; or (c) by the concealment of a material fact; or (d) by the use of a false name or the giving of a false address.

(2) Information communicated to a physician in an effort unlawfully to procure a narcotic drug, or unlawfully to procure the administration of any such drug, shall not be deemed a privileged communication.

(3) No person shall wilfully make a false statement in any prescription, order, report, or record, required by this act.

(4) No person shall, for the purpose of obtaining a narcotic drug, falsely assume the title of, or represent himself to be a manufacturer, wholesaler, apothecary, physician, dentist, veterinarian, or other authorized person.

(5) No person shall make or utter any false or forged prescription or false or forged written order.

(6) No person shall affix any false or forged label to a package or receptacle containing narcotic drugs.

(7) The provisions of this section shall apply to all transactions relating to narcotic drugs under the provisions of Section 8 of this act, in the same way as they apply to transactions under all other sections.

Section 19. In any complaint, information, or indictment and in any action or proceeding brought for the enforcement of any provision of this act, it shall not be necessary to negative any exception, excuse, proviso, or exemption, contained in this act, and the burden of proof of any such exception, excuse, proviso, or exemption, shall be upon the defendant.

Section 20. The state department of health shall cooperate with all peace officers within this state, and all county attorneys to enforce the provisions of this act and with all agencies charged with the enforcement of the laws of the United States, of this state and of all other states relating to narcotic drugs.

Section 21. Any person violating any provisions of this act shall, upon conviction, be punished by a fine not exceeding \$1,000.00 or by imprisonment in a state penal institution for not exceeding five years, or by both such fine and imprisonment.

Section 22. No person shall be prosecuted for a violation of any provisions of this act if such person has been acquitted or convicted under the federal narcotic laws of the same act or omission which, it is alleged, constitutes a violation of this act.

Section 23. If any provision of this act or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of the act which can be given effect without the invalid provision or application, and to this end the provisions of this act are declared to be severable, and nothing in this act may be construed into placing any citizen of this State in double jeopardy, either State or Federal, for the same offense.

Section 24. This act shall be so interpreted and construed as to effectuate its general purpose, to make uniform the laws of those states which enact it.

Section 25. Mason's Minnesota Statutes of 1927, Sections 10453 to 10455-3 and all acts amendatory thereof and supplemental thereto, except Chapter 321, Session Laws of 1935, together with all other acts or parts of acts which are inconsistent with the provisions of this act, are hereby repealed.

Section 26. This act may be cited as the Uniform Narcotic Drug Act.

Approved March 19, 1937.

Vision Tests

The safety campaign is intimately bound up with testing for visual acuity and the improvement, if possible, of eyesight of all drivers of motor vehicles.

The campaign has already been carried into the schools and it should be of especial interest to physicians to note that education about the visual requirements of safe driving and tests for vision are being given in many parts of the state under the auspices of optometrists.

The chairman of the inspection division of the Saint Paul Safety Council (an organization composed of county officials, the county attorney, representatives of civic organizations) is Optometrist Earl Jones of Saint Paul, who has himself, been giving vision tests and instruction in nearby high schools.

In Saint Louis county, on the other hand members of the Eye, Ear, Nose and Throat section of the Saint Louis County Medical Society themselves made such tests in Saint Louis County schools in an effort to work whole-heartedly with safety officials who preferred to call upon qualified physicians for this work.

The disposition of the Minnesota Safety Council to deal with physicians rather than optometrists in drawing up standards for visual requirements has been demonstrated. There is no doubt of their willingness to work with ophthalmologists in any official vision testing or education in the schools.

Doorbell Survey: First Results

The United States Public Health Service has presented its first findings based on the Chronic Disease Survey made a year ago with a special appropriation from Congress and assistance from the relief rolls. Since Minnesota was one of the states selected for the Survey, especial interest attaches here to the result.

Final studies have not yet been made but a preliminary report of results in one industrial community of the North with a population of 150,000 persons was printed in a recent *Journal of the American Medical Association*.

This study shows, according to George St. John Perrott, principal statistician of the health service, and Dorothy Holland, an associate, that the chronic disease problem is a serious one. Approximately one out of every five persons can-

assessed was reported to have a chronic disease, a serious defect of vision or hearing or a permanent impairment resulting from disease or injury. The problem of chronic disease reaches its greatest severity, they note, among the relief population and the aged. In the total population about one in every twenty-five persons had been disabled for one week or longer in the survey year; in marked contrast are the corresponding ratios of one in fourteen for the relief population and one in eight for persons aged sixty-five or over.

The fact that a comparatively large volume of physicians' services were received by the average person on the relief rolls was pointed out by the two commentators. In contrast, however, the higher incidence of chronic illness in the relief group resulted in less care for the average chronic relief case than for the average non-relief case.

Here is the conclusion:

"The surveyed city, in common with most American communities, has no coordinated plan for the control of chronic disease. The inertia of the community in the face of this major health problem results from a lack of awareness of its magnitude, a situation arising in turn from the paucity of factual information concerning the specific burden of chronic disease. By defining the problem in relation to the social and economic groups and the geographic areas in which it is most acute, the final analysis of the entire volume of data collected in the health survey should provide a basis for concerted community action in the control of chronic disease."

Medical Defense

The policies and procedure of organized medicine all over the country will be affected by a recent decision of the American Bar Association with reference to the medical defense plan of the Ohio State Medical Association.

According to this decision, made by the Committees on Professional Ethics and Grievances and on Unauthorized Practice of Law, acting jointly, the medical defense plan of Ohio constitutes the unauthorized practice of law and it is, therefore, unethical for a lawyer to act through the Ohio State Medical Association in furtherance of the plan.

The medical association agreed to submit its case to the Bar Association committees and is, therefore, bound by their decision.

Other state associations are not so bound; but

the decision will establish a precedent by which other defense plans will be judged and lawyers everywhere will presumably be acting unethically if they associate themselves with similar plans.

Ohio Plan

The Ohio plan in operation when the case arose called for a standing medical defense committee which was to have the advice and assistance of the general counsel of the association. The committee was authorized to contribute to the cost of defense under certain conditions, to cooperate in making investigations and obtaining witnesses, to recommend legal counsel on request and to extend such other aid and support as the committee found to be practicable and proper. On request of a member, the committee inquired into all of the facts of the case and forwarded a statement of the facts to the general counsel of the association. The general counsel then conferred with the counsel of the defendant physician or, if the latter had no counsel, assisted him at his own request to secure one. If legal questions of general interest to the medical profession were involved, general counsel sometimes participated in the trial along with counsel employed by the defendant physician but invariably with their full consent and sometimes at their request. Sometimes, when important legal questions were involved, general counsel also appeared in the reviewing courts and filed briefs. Sometimes he appeared in both courts even though the defendant physician was not entitled to defense under the plan.

Although the medical association assumed no legal obligation it ordinarily reimbursed the defendant physician for the amount of legal services, provided the counsel employed cooperated with the committee and the general counsel in handling the suit. This cooperation consists in submission to the committee and counsel of full facts and information in the case with copies of briefs and pleadings so that the general counsel could be informed and make intelligent and helpful suggestions. It was not required for reimbursement, however, that the counsel for the defendant physician follow the suggestions.

Minnesota Not Affected

Minnesota's present plan calls for no aid in court from the association, no counsel and no payment of fees of counsel to be retained by members who are threatened with suit. The

Medical Advisory Committee is merely advisory, as its name indicates. It does not provide defense for anyone, although it investigates facts and otherwise assists the member physician if such assistance is deemed best. Its object is avoidance, as far as possible, of actual malpractice litigation.

In so doing it appears to be entirely within its rights and will not be affected by the bar association decision. It cannot serve as a medium for the transmission of the advice of its own counsel to the defendant member or his counsel.

A Preventive Quartette

(Monthly Editorial Prepared by the Medical Advisory Committee)

The enthusiasm and zeal with which the medical profession of our state seizes upon new means of treatment of disease for its clientele argues well for its future in this state. No higher type of thought or sense of duty than ours graces any other profession.

Enthusiasm

Enthusiasm, youth's asset, is the dynamo of human actions. The worst bankrupt in the world is the man without enthusiasm. May our Association never lose the strength and influences of enthusiasm.

Sincerity

Mark Twain once said, "An injurious truth has no merit over an injurious lie. Neither should ever be uttered." Freedom from hypocrisy or pretense, the simple truth in all dealings with patients, makes a physician loved by all he serves.

Affability

It is the virtue of patience, the courtesy of understanding, the tact of wisdom, the keeping young enough to laugh with little children and sympathetic enough to be considerate of old age;

practiced each day it will bring large measure of happiness.

Common Sense

Common sense is a judicious, reasonable, intelligent understanding of a neighbor's problem. It teaches us not to expect too much of life, that a certain amount of friction and certain number of disappointments are inevitable.

Your Medical Advisory Committee believes that properly directed enthusiasm, sincerity of purpose, affability in demeanor, and the practice of common sense will lessen the malpractice menace and build up a solid, cooperative profession among our 2,300 members free from the malice of misunderstanding.

Minnesota State Board of Medical Examiners

St. Paul Chiropractor Pleads Guilty to Abortion

*Re: State of Minnesota vs. Chester E. Paul
(Two Cases)*

On June 8, 1937, Chester E. Paul, who held a license to practice chiropractic in the State of Minnesota, entered a plea of guilty to an indictment charging him with the crime of abortion. Paul, who is thirty-six years of age, had an office in the Midland Building at Sixth and Wabasha Streets in Saint Paul. On April 28, 1937, for a fee of \$25.00, he performed an abortion on a twenty-four year old Saint Paul girl, who died at Ancker Hospital, Saint Paul, on May 19, 1937, from the results of this abortion. Paul was indicted by the grand jury of Ramsey County on May 21, 1937, charged with the crime of manslaughter in the first degree and with the crime of abortion in connection with this case.

Upon the surrender in open court of his basic science certificate and his chiropractic license, Paul was permitted to plead guilty to the indictment charging him with the crime of abortion. He was sentenced by the Honorable Richard D. O'Brien, Judge of the District Court, to a term of not to exceed four years in a state penal institution, and was placed upon probation in custody of the probation officer of Ramsey County. Paul was admonished by the Court not to practice healing in any way, shape or manner, directly or indirectly. His basic science certificate was sent to the Basic Science Board for cancellation and his chiropractic license to the Chiropractic Board for the same purpose.

In Memoriam

John T. Bowers

1882-1937

DR. JOHN T. BOWERS died suddenly of heart disease at his home in Bemidji, May 19, 1937. Born November 12, 1882, at Maiden Rock, Wisconsin, he attended school there, later graduating from the River Falls Teachers College. He taught school for several years at Turtle Lake, Wisconsin, and then studied pharmacy at Valparaiso University, Valparaiso, Indiana, and medicine at Northwestern University, where he obtained his degree in 1908. Dr. Bowers had formerly practiced at Osceola and Wausau, Wisconsin, Gully, Lake City and Thief River Falls, before moving to Bemidji. He was a member of the Masonic Order and a member of the Upper Mississippi Medical Society, Minnesota State and American Medical Associations.

Charles A. Donaldson

1863-1937

DR. CHARLES A. DONALDSON, a formerly well-known Minneapolis physician, died at his home in Tucson, Arizona, of a cerebral embolus, May 1937.

Dr. Donaldson was born in Ossian, Indiana, April 5, 1863. After completing the course of medicine offered at the Western Medical College at Philadelphia in 1884, he went to Murraysville, Pennsylvania, and practiced for about four years, when he came to Robbinsdale, Minnesota. In 1900 he moved to Minneapolis and was in general practice at West Broadway and Washington until 1906, when he took a course in Chicago in what was then known about the use of the X-ray and returned to Minneapolis, from which time he limited his practice to radiology.

He was a fellow of the American College of Radiology and a past president of the Hennepin County Medical Society. In 1925, following an almost fatal attack of anemia from x-ray exposure, he went to Los Angeles, and two years later, having recovered his health, he located in Mesa, Arizona, where he was in general practice until 1935, when he moved to Tucson.

Dr. Donaldson was an elder of the Bethlehem Presbyterian Church of Minneapolis and was active in church work until illness prevented. His many friends in Minneapolis and elsewhere knew him as a fine Christian gentleman. He is survived by his widow; a daughter, Grace, of Tucson; two sons, Cary M. Donaldson of Minneapolis and Dr. Charles Donaldson of Foley, Minnesota. Two brothers, Dr. Wilson E. Donaldson and Dr. Robert M. Donaldson, live in California.

George Edward

1871-1937

DR. GEORGE EDWARD, Canton, Minnesota, died at the Colonial Hospital, Rochester, Minnesota, June 3, 1937, following a recent operation. He had been in failing health for several months before death came at the age of sixty-six.

Dr. Edward was born August 20, 1871, in Stratford, Ontario, Canada, and was graduated from the schools of Brantford, Ontario. He taught school before going to Chicago, where he was employed in an editorial capacity by a newspaper there.

While studying at the University of Minnesota he roomed the first year with Dr. Oscar Heyerdale of the State Hospital and with the late Dr. Henry Plummer—both of Rochester. Receiving his medical degree in 1897, he served his internship at the Minneapolis General Hospital.

Dr. Edward first located at Iroquois, South Dakota, later moving to Lake Preston, Midland, Brookings and Bruce, South Dakota. While at Lake Preston Dr. Edward married Bertha E. Langlie, who died in 1921, leaving four children. In 1924 Dr. Edward married Elizabeth West and located in Excelsior, Minnesota, moving to Canton, Minnesota, in 1926.

During the World War Dr. Edward enlisted as a first lieutenant in the Medical Corps and before his discharge July 1, 1919, was promoted to be a captain. He was stationed at various times at Fort Ripley, Camp Pike, Camp Dix and Camp Merritt before serving overseas.

Dr. Edward was a member of the Masonic Order and the American Legion.

Herman W. Froehlich

1880-1937

DR. HERMAN W. FROEHLICH of Minneapolis died following a heart attack on June 14, 1937, at the age of fifty-eight.

Born in St. Claire, Minnesota, Dr. Froehlich had practiced at Pine City, Crosby, Stevenson and Thief River Falls before coming to Minneapolis six years ago. He was a graduate of the Mankato Teachers College and of Hamline University medical school. He was at one time superintendent of schools at Sanborn, Minnesota.

Dr. Froehlich was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He was also a member of the American College of Surgeons. He had taken postgraduate work on several occasions at the Polyclinic, Chicago, at the New York City Hospital and in Vienna and Paris. He was a member of the staffs of St. Andrews and St. Barnabas Hospitals in Minneapolis.

Dr. Froehlich is survived by his widow, two sons, William F. and Clifford, of Minneapolis, and his father, William F. Froehlich of St. Claire, Minnesota.

Frederick W. Logan

1873-1937

DR. FREDERICK W. LOGAN of Blue Earth died at Abbott Hospital, Minneapolis, May 29, 1937, after an illness of less than a day.

Dr. Logan was born May 27, 1873, at Spencer, Minnesota. After receiving his medical degree at the University of Iowa in 1901, he practiced at Fenton, Minnesota, until 1918, when he moved to Blue Earth. While in Blue Earth Dr. Logan made many friends and was an active member of the Blue Earth Valley Medical Society. He was also a member of the Minnesota State and American Medical Associations.

On December 31, 1902, Dr. Logan married Emma Heise. Mrs. Logan died ten years ago. Besides a daughter, Mrs. Robert P. Caron of Minneapolis, Dr. Logan is survived by four brothers, three sisters and two granddaughters.

Alex Ridgway

1855-1937

DR. ALEX RIDGWAY was born in Columbus, Wisconsin, July 28, 1855, and died at his home in South Haven, April 3, 1937, at the age of eighty-one.

Dr. Ridgway studied medicine at the University of Minnesota, and received his degree in 1894. He then located in Belgrade, Minnesota, where he practiced until 1920, when he moved to South Haven.

Dr. Ridgway was married in 1896 to Lena Hanson of Minneapolis. He is survived by his wife, one daughter, Mabel, and one son, Russell. Dr. Joseph Ridgway of Minneapolis and Dr. Alfred M. Ridgway of Annandale, Minnesota, are brothers.

Roy A. Schnacke

1886-1937

DR. ROY A. SCHNACKE, for years a police surgeon in Saint Paul, when he was a familiar figure to Saint Paul residents, died May 21, 1937, at a hospital in Brainerd from a heart ailment. He had gone to Brainerd on a visit from his home in McGregor, where he had been practicing since 1932.

Born and educated in Saint Paul, Dr. Schnacke received his medical degree at the University of Minnesota. He began practice in Saint Paul and was appointed police surgeon. After a few years he married and moved to Madison, Minnesota, where he was located at the time of the influenza epidemic in 1918. It is said he began the use of narcotics at that time and he was repeatedly in trouble with the Federal narcotic agents for a period of years.

Returning to Saint Paul, he was employed by Swift and Company and in 1921, on resuming his position as police surgeon, he married a second time. In 1925, he was suspended as police surgeon upon conviction of narcotic charges by the Federal narcotic agents, but was reinstated. In 1929, he resigned and asked to be

sent to the workhouse to be cured of his narcotic addiction. There he remained a month and at this time was separated from his second wife. Apparently not cured by this brief stay at the workhouse, he spent two years at Leavenworth shortly thereafter.

In 1932, Dr. Schnacke married again and moved to McGregor. He is survived by his widow and a daughter, Dianne.

Marmola

The Bureau of Investigation reports that the Federal Trade Commission, in a release dated January 25, stated that it had ordered the Raladam Company of Detroit to cease and desist from certain misrepresentations in the sale of its product "Marmola." Marmola is an old timer in the obesity-reducing field. In 1926, when the postal authorities were about to issue a fraud order against the Marmola Company, the manufacturer discontinued the sale of Marmola through the mails, but created the Raladam Company, which continued to sell the product through the retail drug stores. In February, 1928, the Federal Trade Commission ordered the Raladam Company, its officers, agents, representatives and employees, to cease and desist from certain representations in connection with the advertising, offering for sale, and sale in commerce of the product Marmola (*The Journal*, May 4, 1929, p. 1541). However, this order was vacated by the United States Circuit Court of Appeals on June 28, 1930 (*The Journal*, Aug. 2, 1930, p. 359). The present action of the Federal Trade Commission prohibits a number of representations in the sale of "Marmola," including the statement "that thyroid deficiency is a common or the usual cause of obesity or excess fat or that, if a person is overweight, it is necessarily an indication of thyroid deficiency and that thyroid should be taken for reducing." Medical and Scientific opinion, on which the Federal Trade Commission based its conclusions, was to the effect that only a small proportion of cases of overweight result from thyroid deficiency; that in many cases Marmola cannot be safely used and, in any case, should be taken only on the advice of a physician. The present action of the Federal Trade Commission closes another interesting chapter in the Marmola story, but not necessarily the finale. (*J. A. M. A.*, Feb. 20, 1937, p. 658.)

Insulin Shock Treatment for Schizophrenia

The amazing results already reported in some cases in which the insulin shock treatment has been applied in schizophrenia have resulted naturally in a certain amount of premature enthusiasm in relationship to the use of the method. It has been widely exploited in the press with the statement that it constitutes a cure for what has formerly been considered an incurable disease. As a result, the Committee on Public Education of the American Psychiatric Association has considered it worth while to issue a public statement on the present status of this new method. The statement says, in part: "It is hoped, and may prove to be a fact, that the so-called insulin shock treatment for dementia praecox will find a useful place among the forms of treatment for dementia praecox, but its exact value has yet to be determined and it can be definitely stated that it is not a specific, nor by any means a cure for all cases of dementia praecox. . . . It is, however, at the present time, receiving careful study in the New York and Massachusetts State Hospital systems, Bellevue Hospital, New York, and other scientific centers, but it should not be undertaken except by those adequately trained to meet the dangers connected with the treatment." (*J. A. M. A.*, Feb. 13, 1937, p. 560.)

OF GENERAL INTEREST

Dr. W. R. Humphrey was elected president of the St. Water Rotary Club, to take office in July.

* * *

Dr. and Mrs. E. F. Robb, of Minneapolis, have left on a summer tour of Europe.

* * *

Dr. G. K. Sellers, who has been practicing at Motley for several years, has moved his offices to Dassel.

* * *

Dr. H. A. Carlson of Minneapolis was recently married to Miss Eleanor Mann of Dickinson, N. D.

* * *

Dr. C. Henning Mattson of Saint Paul has become associated with the Olson Clinic at Duluth.

* * *

Dr. Robert M. Burns was elected president of the St. Paul Lions Club at its annual meeting.

* * *

Dr. D. D. Whittemore of Cloquet has purchased the office of Dr. J. T. Bowers of Bemidji.

* * *

Dr. J. J. Morrow of Austin was the principal speaker at the Decoration Day exercises at Alden.

* * *

Dr. Wesley W. Spink, of Duluth, has been appointed assistant professor of medicine at the University of Minnesota.

* * *

Dr. S. B. Seitz, formerly of Mott, North Dakota, is opening offices in Barnesville for the practice of medicine.

* * *

Dr. Charles L. Farabaugh was chosen grand knight of the Owatonna council of the Knights of Columbus at its annual meeting in June.

* * *

Dr. Robert A. Youngman recently came to Fairmont and become affiliated in the practice of medicine with Dr. H. P. and Donald Johnson.

* * *

Dr. A. M. Smith, formerly of Minneapolis, has established an office in St. Louis Park, and has taken over the duties of health officer and school physician.

* * *

Dr. Henry Fiskette of Duluth, who has concluded his internship at St. Mary's Hospital, was appointed assistant physician at the Hearing Hospital.

* * *

Dr. L. J. Monson has recently located at Canby for the practice of medicine. He was formerly associated with Dr. P. E. Hermanson of Hendricks.

Dr. Robert Potter, of Minneapolis, will be the new associate of Dr. P. E. Hermanson, of Hendricks, succeeding Dr. L. J. Monson, who has gone to Canby.

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Dr. W. A. Coventry and Dr. O. W. Rowe, of Duluth, were speakers at the first of a series of Refresher Courses to be held in Grand Rapids, beginning May 26.

* * *

Dr. W. S. Nettrour, who has been the physician at the Hormel plant at Austin, has gone to Pittsburgh to practice medicine.

* * *

Dr. E. D. Stoddard, formerly located at High Forest and later at Stewartville, died recently at his home in Los Angeles at the age of eighty-seven.

* * *

Dr. Philemon C. Roy, Jr., Saint Paul, and Alice Bartles, were married May 26. Dr. Roy is the son of Dr. Philemon Roy of Saint Paul.

* * *

Dr. J. E. Schraepel, recently with the University Hospital at Minneapolis, has become associated with Dr. J. A. Malerich, in Caledonia.

* * *

Dr. C. W. Moore of Eveleth received special mention in the last issue of the *United States Steel News*, which featured the entire Mesaba and Vermilion range districts.

* * *

Dr. E. J. West, formerly with the Arrowhead Clinic at Duluth, has left the city to take up postgraduate study. He plans to return following the completion of his course.

* * *

Dr. Thomas E. Havel, whose home was formerly in Montgomery, Minnesota, has located at Blue Earth. After graduating from Creighton University in 1935, he practiced the past year in Omaha.

* * *

Dr. Thomas B. Magath of the Mayo Clinic has been appointed Health Officer of the city of Rochester. He succeeds Dr. Charles H. Mayo, who has been Health Officer for twenty-five years.

* * *

The Minnesota Society of Neurology and Psychiatry met in Rochester on May 29 for an interesting meeting. Dr. H. W. Woltman of Rochester, vice president of the Society, was in charge of the program.

* * *

Dr. G. A. Slater and Dr. W. P. Ross of Worthington held a clinic at St. James, May 26, for the examination of persons who have been in contact with others having active tuberculosis.

OF GENERAL INTEREST

Dr. A. V. Stoesser, of the University of Minnesota, conducted clinics for pre-school and primary grade children at St. George and Courtland, the latter part of May.

* * *

Dr. and Mrs. H. Boysen of Welcome spent their vacation on the Atlantic coast, leaving Dr. West of Duluth in charge of Dr. Boysen's practice during his absence.

* * *

Drs. J. R. Manley, W. E. Hatch and W. A. Coventry have been reappointed as the medical advisory committee of the St. Louis county poor commission for the ensuing year.

* * *

Dr. Oscar C. Heyerdale, a member of the Rochester State Hospital staff for thirty-eight years, will retire July 1. Since 1912 he has been Assistant Medical Superintendent.

* * *

The Minnesota Surgical Society met in Rochester May 21 and 22 for their annual two-day convention. Dr. Waltman Walters was chairman of the program committee.

* * *

Dr. W. W. Higgs of Park Rapids now has associated with him his daughter, Miss Elizabeth Higgs, who has completed a course at the University of Minnesota, as medical technician.

* * *

Dr. O. A. Olson of Minneapolis was a member of a group of American physicians who recently toured South American cities, where they gave a series of lectures and clinical programs.

* * *

Dr. C. J. Pothoff has moved to Sherburn, where he has taken over the practice of Dr. H. B. Wells. Dr. Wells has moved to Jackson, where he is affiliated with the Halloran Hospital.

* * *

Dr. C. W. Froats, formerly of Thief River Falls, is now associated with Dr. E. C. Hartley in the practice of obstetrics and gynecology, Lowry Medical Arts Building, Saint Paul.

* * *

The Northern Minnesota Medical Association will meet at Virginia on August 27 and 28. Dr. A. N. Collins, chairman of the program committee, is arranging a fine scientific program.

* * *

Dr. W. A. Coventry and Dr. F. J. Elias have been appointed to three-year terms each on the Duluth Board of Health. Dr. L. A. Barney and Dr. B. F. Davis were appointed to two-year terms.

* * *

Dr. William H. Long of Fargo is the newly elected president of the North Dakota State Medical Association. After graduating from the University of Minne-

sota medical school in 1912, Dr. Long took a fellowship at the Mayo Clinic before moving to Fargo.

* * *

Dr. Grant Hartnagel has become associated with E. H. Juers of Red Wing, in the practice of medicine. Dr. Hartnagel has just completed his internship and received his degree of Doctor of Medicine, from University of Minnesota.

* * *

Dr. J. F. Malloy, formerly of Mitchell, S. D., joined the Bratrud Clinic at Thief River Falls, as associate surgeon. Dr. Malloy is a fellow of the American College of Surgeons, and was formerly associated with the Mayo Clinic.

* * *

Dr. Donald C. Balfour, professor of surgery and associate director of the Mayo Foundation in Rochester has been appointed director of the foundation beginning July 1, by the University of Minnesota regents. He will succeed Dr. L. B. Wilson, who will retire at that time.

* * *

Dr. and Mrs. Paul E. Kenyon, for many years residents of Wadena, are making plans to move to South. Dr. Kenyon practiced medicine for thirty years and then retired from active practice in 1933 to engage in business as manager of the Gamble Store in Sebeka.

* * *

Dr. W. A. Merritt, who has been associated with Dr. J. Will Gamble and Dr. Paul Gamble in the Gamble Clinic for the past three years, has received a fellowship in medicine at the Mayo Clinic, effective January 1, 1938. In the intervening months Dr. Merritt will act as medical officer in a CCC camp.

* * *

Dr. Myron O. Henry of Minneapolis gave an orthopedic clinic on "Fractures of the Neck of the Femur" at the meeting of the South Dakota State Medical Association in Rapid City, South Dakota, on May 25. He also presented a paper on "Use of Bone Chips in Orthopedic Surgery" at the meeting.

* * *

Dr. and Mrs. E. S. Platou left for New York in May, where Dr. Platou attended the national convention of the American Academy of Pediatrics. He also attended the annual convention of the American Medical Association at Atlantic City before returning home.

* * *

The Blue Earth Valley Medical Society met with the pharmacists of Faribault and Martin counties June 10 at the Fairmont Hotel. The meeting was addressed by Mr. Gregg of Minneapolis, who gave an interesting talk on the relations of the professions of pharmacy and medicine. Some thirty attended the meeting and an interesting discussion followed the address.

* * *

Dr. Stanley C. Peterson, formerly of the Bloomington-Lake Clinic, Minneapolis, has established a practice in Medford. Dr. Peterson is a graduate of the

University of Minnesota, 1933, and spent two years as an interne in the Wayne County Hospital, Detroit, Michigan, later spending a half year in the Midway Hospital, Saint Paul.

* * *

Dr. Edward J. Engberg of Saint Paul has been appointed superintendent of the Faribault School for the Feeble-minded to succeed Dr. James M. Murdock, who has resigned. Dr. Engberg is a specialist in psychiatry and neurology and was formerly the secretary of the Minnesota State Board of Medical Examiners. He assumed his new duties, July 1.

* * *

Dr. John A. Evert of Glendive, Montana, was recently elected president of the Montana State Medical Association. Dr. Evert graduated from the University of Minnesota medical school in 1913 and spent several years at the Northern Pacific Hospital at Brainerd following graduation. He, at present, is in charge of the Northern Pacific Hospital at Glendive.

* * *

Dr. J. A. Myers of Minneapolis was elected president of the National Tuberculosis Association at its annual convention, held in June. The other officers elected were Surgeon General Thomas Parran, Jr., vice president; Dr. Chesley Bush of Livermore, California, president; Dr. Charles J. Hatfield of Philadelphia, secretary, and Collier Platt of New York, treasurer.

* * *

Dr. Elmer G. Balsam, Billings, Montana, secretary of the Montana State Medical Association for many years and president of the Montana State Board of Health of Montana, died suddenly, May 13, 1937, from an embolus following a minor injury to the knee. Dr. Balsam, following graduation from the University of Michigan, spent several years at the Northern Pacific Hospital in Brainerd before moving to Montana.

* * *

Dr. S. A. Maxeiner with a score of 79 in Class A and Dr. J. S. Reynolds with a score of 94 in Class B were the leaders for low gross scores in the Hennepin County Medical Society golf competition at the University course on May 26. Low net leaders are Dr. B. Solhaug with 68 in Class A and Dr. Leo Fink with 74 in Class B. Trophies are awarded on season's play in monthly tournaments. St. Mary's Hospital took the lead for the hospital staff trophy, with Asbury second and Abbott third.

* * *

Dr. A. M. Hanson of Faribault was awarded a gold medal by the American Medical Association for an outstanding technical exhibit on new lines of experimental research. The exhibit which won the award illustrated original investigation of normal and abnormal growth associated with the development of sarcoma in rats.

For studies not entirely experimental the gold medal went to Drs. M. S. Henderson, H. W. Meyerding, R. K. Thornley and H. B. Macey of the Mayo Clinic, for their exhibit on fractures.

JULY, 1937

Hospital Notes

The doctors and officials of Asbury Hospital had a picnic and played golf at the Bloomington golf course early this month.

* * *

The Hospital Association of Hendricks held its annual meeting on June 1. It was reported that the Association is now clear of all debt, although a large amount of new equipment has been purchased each year.

* * *

Dr. Harold R. Leland has been elected chief of staff of Fairview Hospital, succeeding Dr. R. C. Logefiel. Other officers named are Dr. Richard I. Dorge, vice-president, and Dr. Arthur C. Skjold, secretary and treasurer.

* * *

Dr. E. G. Nethercott of Pine City has purchased some property on Cross Lake and expects to remodel it for use as a hospital. It is to be equipped with complete medical, surgical and maternity equipment to meet any requirements.

* * *

Drs. J. C. Nuebel, R. M. Leick, Anthony T. Merski and D. J. Sabia have completed their work as internes at St. Joseph's Hospital, St. Paul. They received their diplomas at a dinner given June 2, at which nearly seventy-five practicing physicians who also had served their internships at St. Joseph's Hospital were present.

* * *

Members of the staff of St. Andrews Hospital presented Miss Rebecca Peterson, who retired from service as superintendent June 15, with a silver dinner service. A gift of \$500 from the hospital board was also given to Miss Peterson. Miss Peterson will be succeeded by Miss Esther Wolfe, superintendent of the hospital at Hutchinson, Minnesota.

* * *

Present members of the medical staff of the Virginia Municipal Hospital who were all re-elected for the year commencing July 1 by the Virginia Hospital Commission include: Drs. H. B. Ewens, C. E. Goodman, Andrea Hall, Charles B. Lenont, J. Arnold Malmstrom, R. P. Pearsall, S. P. McDaniel, John Raihala, R. A. Salter, Oliver E. Sarff, Paul E. Swanson, Harry W. Morcom and Edward N. Peterson.

* * *

Remodeling of the Gardner Hospital at Fairmont, Minnesota, which was begun this spring has been completed. Modern features such as an electrically controlled ventilating system, modern x-ray equipment, operating room and kitchen make this ten-room hospital one of the most conveniently arranged small hospitals in the state. Dr. V. H. Gardner moved into his new offices in the hospital building, June 26.

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR JULY

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 9:45 A. M. every Saturday over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

- July 3—Fourth of July Injuries
- July 10—Summer Diets
- July 17—Summer Skin Disorders
- July 24—Dysentery
- July 31—Vitamins and the Teeth

AMERICAN BOARD OF SURGERY ORGANIZED

In answer to the widespread demand for an agency which will attempt to certify competent surgeons the American Board of Surgery has recently been organized. This Board is a member of the Advisory Board of Medical Specialties, which includes all of the boards of certification for the different medical specialties which have been already organized. Since boards were in existence for the certification of practitioners of some of the surgical specialties, such as ophthalmology, otolaryngology, obstetrics and gynecology, genito-urinary surgery and orthopedic surgery it is expected that the American Board of Surgery will be responsible for the certification of general surgeons as well as those practicing in the remaining specialized subdivisions of surgery.

Acting upon the invitation of the American Surgical Association the following surgical societies coöperated in the creation of the American Board of Surgery: the American Surgical Association, the Surgical Section of the American Medical Association, the American College of Surgeons, the Southern Surgical Association, the Western Surgical Association, the Pacific Coast Surgical Association and the New England Surgical Society. The first three of these bodies, which are national in scope, have three representatives on the Board. All of the other societies have one representative each. The representatives of the coöperating societies are nominated by the society which they represent and upon approval of the Board shall become members of it. The term of membership on the Board will be six years. The following were chosen to represent the coöperating surgical societies:

*Representing the American Surgical Association—*Dr. Evarts A. Graham, Dr. Arthur W. Elting, Dr. Allen O. Whipple.

Representing the American College of Surgeons—

Dr. Donald Guthrie, Dr. Erwin R. Schmidt, Dr. Harry B. Stone.

*Representing the Surgical Section of the A. M. A.—*Dr. Fred W. Rankin, Dr. Howard M. Clute, Dr. J. Stewart Rodman.

*Representing the New England Surgical Society—*r. Philemon E. Truesdale.

*Representing the Western Surgical Association—*r. Thomas Orr.

*Representing the Southern Surgical Association—*r. Robert Payne.

*Representing the Pacific Coast Surgical Association—*Dr. Thomas Joyce.

The following officers were elected: Chairman, r. Evarts A. Graham; Vice-Chairman, Dr. Allen O. Whipple; Secretary-Treasurer, Dr. J. Stewart Rodman.

Two groups of candidates are recognized for qualification by the Board:

- (A) Those who have already amply demonstrated their fitness as trained specialists in surgery.
- (B) Those who, having met the general and special requirements exacted by the Board, successfully pass its qualifying examination.

The first of these groups, the Founders' Group, upon invitation by the Board, will be chosen from the following:

- (1) Professors and Associate Professors of Surgery in approved medical schools in the United States and Canada.
- (2) Those who for fifteen years prior to the Board's organization have limited their practice to surgery.
- (3) Members of the American Surgical Association, the Southern Surgical Association, the Western Surgical Association, the Pacific Coast Surgical Association and the New England Surgical Society, who are in good standing January 9, 1937.

All applications for the Founders' Group must be received within two years of the Board's organization, January 9, 1937. No candidates for the Founders' Group will be considered after that date.

Requirements for those to be qualified by examination will be as follows:

- (1) Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the A. M. A. or graduation from an approved foreign school.
- (2) Completion of an internship of not less than one year in a hospital approved by the same Council or its equivalent in the opinion of the Board.
- (3) *Special Training.* A further period of graduate work of not less than three years devoted to surgery taken in a recognized graduate school of medicine or in a hospital or under the sponsorship accredited by the American Board of St-

gery for the training of surgeons. This period of special training shall be of such character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences as applied to clinical surgery will be required in the examination. Adequate operative experience in which the candidate has assumed the whole responsibility will be required. An additional period of not less than two years of study or practice in surgery.

) The candidate must present to the Board sufficient evidence of good moral character as to justify it in the belief that he will not engage in fee splitting and other dishonest practices.

is expected that the Board, with the assistance and cooperation of the American Medical Association and the American College of Surgeons, will be able to increase the facilities which now exist for the adequate training of young surgeons by means of residencies, fellowships, etc., in suitable hospitals.

The above requirements, especially those referring to special training, are subject to change from time to time as the existing opportunities for training in this field of specialization may be broadened.

The qualifying examination will be divided into two parts: Part I, written, and Part II, clinical, bedside and practical. The written part, Part I, will concern itself with a general surgical problems and with the clinical application of the basic sciences of surgery to these problems. This examination will cover a period of three hours each and will be held simultaneously in as many centers as are necessary to accommodate the number of applicants who are eligible. Part II is entirely oral and will also concern itself, in the main, with general surgery, and, as stated for Part I, clinical application of the basic sciences to the clinical problem represented.

In addition to this, in Part II, an examination will be given to test the candidate's knowledge of operative surgery, x-ray plate interpretation and the principles and application of surgical anesthesia. This examination will be held in as many centers as the Board may determine necessary to accommodate the eligible candidates. Reexaminations will be allowed, providing one year shall elapse between examinations.

The fee for Group A, the Founders' Group, shall be \$5. The fee for Group B shall be \$75, payable as follows: \$5 for registration fee, which shall be returned if the candidate is not accepted for examination; \$20 for Part I; and \$50 for Part II. The same fee will be required for each reexamination. Once the candidate becomes qualified, he will have no further financial obligation to the Board.

This Board is a non-profit organization. All fees will be used, after a reasonable amount is set aside for necessary expenses in maintaining its office, conducting examinations, etc., to aid in improving existing opportunities for the training of the surgeon.

A certificate attesting to a candidate's qualifications in surgery after meeting the requirements of the Board will be issued, having been signed by its officers.

Any certificate issued by the Board shall be subject to revocation by the Board at any time in case it shall determine, in its sole judgment, that a candidate, who has received a certificate, either was not properly qualified to receive it or has become disqualified since its receipt.

The Board will hold its first examination (Part I, written) on September 20, 1937. All inquiries concerning applications for this examination should be received by the secretary's office promptly.

Requests for booklets of information, application blanks, and other information should be addressed to the Secretary—Dr. J. Stewart Rodman, 225 South 15th Street, Philadelphia, Pennsylvania.

AMERICAN CONGRESS OF PHYSICAL THERAPY

The sixteenth annual session of the American Congress of Physical Therapy will be held in Cincinnati, Ohio, September 20 to 24. Headquarters will be at the Netherland Plaza Hotel. There will be no registration fee, but the meeting is open only to duly licensed physicians and properly vouched for technical assistants. For further information, Dr. A. R. Hollender, Executive Director, may be addressed at 30 North Michigan Avenue, Chicago, Illinois.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The Northern Minnesota Medical Association will hold their annual meeting this year at Virginia, August 27th and 28th. A full program is being planned and will include speakers of note from the different districts of the state.

Virginia is in the heart of the Northern Minnesota vacation country, the center of a beautiful lake and forest country and should be ideal for a summer meeting.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Southern Minnesota Medical Association will be held in Winona, Minnesota, August 11. It is planned to hold the afternoon session on board a boat on the Mississippi River. Dr. H. C. Haben, Rochester, is president of the Association this year, and Dr. N. W. Barker, Rochester, is secretary-treasurer.

PROCEEDINGS of the MINNESOTA ACADEMY of MEDICINE

Meeting of April 14, 1937

THE regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, April 14, 1937. The meeting was called to order at 8 o'clock by the president, Dr. E. M. Jones.

There were fifty members and one guest present. Minutes of the March meeting were read and approved.

The scientific program followed.

NOTES ON A COMMON TYPE OF EMOTIONAL PROBLEM ENCOUNTERED AMONG COLLEGE STUDENTS

E. M. DE BERRY, M.D.

Minneapolis

Dr. de Berry, University of Minnesota, read his Inaugural Thesis on the above subject. (See page 427.)

Discussion

DR. W. H. HENGSTLER (Saint Paul): This splendid presentation of Dr. de Berry touches a field in psychiatry which has grown tremendously in the last ten years. Those of us practicing psychiatry are thought by many to deal only with the insane, but the greater part of our practice today is with these emotional disorders. Dr. de Berry is fortunate in seeing a wealth of material in the adolescent period and to be able to see conditions in their incipency, that we see in adults and their struggle in competition with the world. I was very glad to have him say what he did about masturbation. In these emotional cases, the problem of masturbation is invariably present. It even pops up in the involuntal period of life and offers the basis for the type of depression which leads to suicide. The tendency of all these people who have these emotional disorders is to go to the public libraries and get some book and read all about what some layman has said about it. The most common question asked of the psychiatrist is, "What books can you recommend for me to read to help solve my problem?" Of course there is nothing worse than a book written by a layman describing all the signs and symptoms of his own experience and trying to tell the rest of the world what to do about it. The best advice would be that the patient go to a good psychiatrist and have him get his information from that one source. I recall one case which shows very well this sudden feeling of inadequacy in these patients. This young man was a perfectly normal young man, employed by a large corporation, and a graduate of a mining engineering school. He was perfectly normal until he became involved in an affair with a girl whom he later married because he had to. After the wedding he continued normal until the birth of a baby which was about one month prior to the necessary gestation period. After that, when he reported for work, he got the idea that everyone in his office knew about this and he began to blush; and ever since then he has been unable to approach friends or any one in the office without this sensation of blushing and intense perspiration. It has so interfered with his work that he is completely demoralized.

I want to express my appreciation of Dr. de Berry's contribution. I think there is nothing more important

than these disorders of personality; it is a subject worthy of the consideration of every doctor practicing medicine.

DR. DE BERRY (closing): There is nothing much to add except possibly in response to Dr. Hengstler's remark about reading of books written by laymen. The reading of books written by psychiatrists is even worse. The layman may invent terms, but the psychiatrist has it all over the layman in inventing terms. Physicians are particularly careless in what they say, perhaps because these books are supposed to be read only by physicians. They are read by laymen, however, on whom they have quite a different effect. It seems to me this problem (certainly my problems at the University) would be lightened if medical books were not available to students and the general public.

OSTEOCHONDROMATOSIS OF THE KNEE JOINT

ARTHUR W. IDE, M.D.

Saint Paul

This patient, J. C. C., has been for many years employed as a railroad freight conductor. He is fifty-two years old, and has been under observation and treatment for the last year on account of trouble with his right knee.

He gives a history of first injuring this knee when he was fourteen years old. At that time he was shot with a 22 caliber bullet. The bullet penetrated the skin just below the patella and emerged in front of the patella. It probably did not enter the joint. The wound healed in about three weeks and gave him no serious difficulty at that time or later. About three weeks after the injury, the patient fell over a stump and injured his knee again. The knee was injured by some splinter from this stump and the resulting wound was slow healing. He says it "festered." It took him five or six weeks to recover from this injury, but, once healed it gave him no further trouble.

About six weeks later, he struck this knee again. At that time he was working as a brakeman on the railroad and injured the knee while handling freight. He was struck above the knee by a heavy fly-wheel which he was handling. He was unable to work for only two weeks at that time, but he thinks that this accident damaged the knee considerably. After that, he worked for about twenty-five years without serious trouble. He does not think he had any disability whatever in this knee during those years.

The next time he experienced any difficulty was in 1934. At that time he noticed some little trouble with this knee, but there was no serious inconvenience. In May, 1935, he was taken seriously ill with pneumonia and did not regain his health until October, 1935. When he recovered from this pneumonia, the knee began to give him some trouble. Prior to that time he had felt a small lump above the patella but he had not given the matter any serious consideration.

a young man he had worked as a brakeman on freight trains and during the later years he had been a conductor on a freight train. He was able to get about very well even in these occupations.

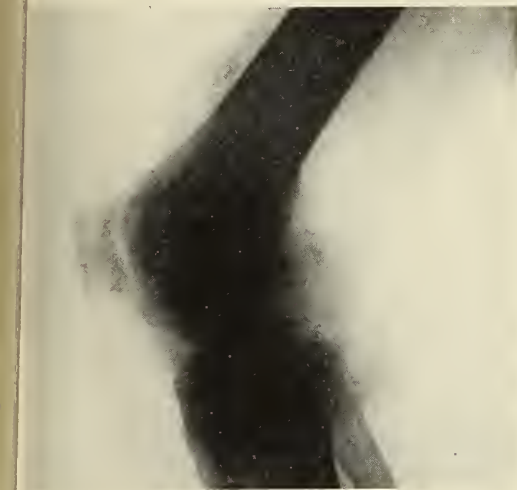


Fig. 1

Following his sickness in 1935, he went back to work in December. At that time he began to have stiffness and pain in his right knee. The knee gradually became worse. In spite of this trouble, he worked for six months before reporting for x-ray examination. He was still able to work at his job as conductor on a freight train, but, on account of this trouble, his occupation was changed in August, 1936, and he went to work as conductor on a passenger train. He was able to handle this job until December, 1936. At that time his knee became so bad that he was not able to work at all and he was pensioned on a basis of total disability.

Since that time he has not been able to get about except on crutches and even with his crutches he has considerable difficulty. The knee is painful when he puts his weight on it and it is also painful when he bends the joint.

X-ray pictures, taken in July, 1936, showed many regular bodies in the joint and in the connecting bursa. These bodies are found in all parts of the knee joint and in the bursa. They are particularly noticeable posteriorly. There is also a very noticeable roughening of the articular surface of the joint and there is other evidence of arthritis.

X-ray pictures, taken in February, 1937, show evidence of progress in the arthritic condition in this joint. The diagnosis in this case is one of osteochondromatosis with an accompanying arthritis.

Osteochondromatosis is a rare condition characterized by the formation of bodies in the joint. These bodies are pedunculated and may become detached and form loose bodies in the joints. They occupy the joint spaces and connecting bursa. This disease is usually nonarticular. Various joints may be affected, but the knee is the joint most commonly affected. Osteo-

chondromatosis is a clinical entity and should not be confused with other conditions where loose bodies are found in the joints.

Rixford, in 1930, referred to eighty cases which were reported up to 1929 and he added five cases, bringing the total number of cases reported to that date up to eighty-five. These figures indicate a rarity of this condition which is probably not borne out by the actual facts. Undoubtedly this condition is far more frequent than these figures would indicate.

Etiology.—There are four factors that are considered important in the etiology of this condition, namely, infection, trauma, embryonic rests and neoplasm. Infection has not been given a very prominent place in the consideration of this condition. In the case here reported, infection is undoubtedly a complicating factor but not an etiological factor. Undoubtedly this patient has had an osteochondromatosis for many years but has had no disability from it until recently. The disability has been due to the complicating arthritis. He had a severe respiratory infection with a resulting arthritis in this diseased knee joint.

It is surprising that these patients do not have more disability in these joints that contain so many loose bodies. Undoubtedly this patient worked in railway train service for many years with this knee when it contained a great many of these bodies. He did not know there was anything particularly wrong with the knee during most of this time. The real disability began when the arthritis developed.

Disability in these uncomplicated cases comes from locking of the knee joint, the same factor that produces disability in ordinary cases of foreign bodies in the joints. Trauma is undoubtedly a factor in the consideration of this condition. However, it is not thought to be a cause of the condition. These bodies may be broken from their pedicle by trauma and undoubtedly trauma is, in many instances, a complicating factor in causing disability in these joints. Most of these cases give a history of trauma, as does this case. Just how much effect the trauma has had is problematical.

It is quite likely that embryonic rests are important etiological factors. These bodies apparently grow from the synovial membrane, particularly near the attachment of this membrane to the articular cartilage. These bodies grow out and are connected with the synovial membrane by means of stalks. These stalks may be broken off and in this way the bodies may become loose in the joint. It has been suggested that these bodies may continue to grow after they do become loose in the joint. If this is the case, it is perhaps one of the best examples of a body growing in vivo without definite connection with other structures. It is possible that the joint fluid may nourish these bodies and cause them to grow. It would seem reasonable that this may occur, but this has never been demonstrated.

Ewing describes the microscopic appearance of one of these bodies as follows: "It appears to be an ossifying, papillomatous synovitis that has taken on the aspects of a benign neoplasm. Microscopically, these

bodies show a cartilaginous formation with a tendency toward calcification."

It is argued that this is a neoplasm; however, it is never a malignant growth.

Henderson has reported one case of osteochondromatosis with chondro-sarcoma of the femur. This is, so far as I know, the only case reported of this condition with a malignant condition coexisting.

Diagnosis.—Diagnosis is made by x-ray. Undoubtedly these bodies exist before they can be demonstrated by x-ray. This can be shown only when the calcifying process is developed to such an extent that the x-ray will show the shadow.

Treatment.—The treatment is surgical. In uncomplicated cases the joint is exposed by an appropriate incision and the bodies are removed as completely as possible. It has been suggested that a thorough flushing of the joint with saline solution under pressure may dislodge bodies that otherwise might be overlooked. A complete synovectomy may be advisable.

In the case here reported, surgical treatment has been delayed because of the coexisting arthritis. The knee has been immobilized and when the arthritis has subsided surgical treatment will be instituted.

Discussion

DR. ARNOLD SCHWYZER (Saint Paul): My experience with this condition has been in just one case. It involved the elbow. There were very large bulky masses. The parts removed, completely filled a 2-ounce vaseline bottle. What Dr. Ide said about not being hesitant at removing large parts of the affected synovialis is important. I had to cut out the major part of it and the result was very good. I think this is quite a promising case, but unless one opens the joint very widely, frees the tendon of the quadriceps, and gets at the posterior recesses of the joint, one could not expect very much of a result in such a case.

DR. KENNETH BULKLEY (Minneapolis): I would like to ask Dr. Ide how he plans to expose the joint when he does do some surgery on it.

DR. IDE (closing): I am inclined to think that I will use the "U" shaped incision and saw the patella transversely. This undoubtedly gives the best exposure. This is desirable in this case. A radical operation should be done. I believe we will eventually get a satisfactory result.

SOLITARY CYST OF THE KIDNEY

Report of Two Cases

ARNOLD SCHWYZER, M.D.

Saint Paul

The first case was in a woman fifty five years of age who had had seven children. For about a year she had suffered from some substernal pain and from nausea. The nausea had, however, disappeared during the last months. In the left side of the abdomen one could readily feel a large rounded mass reaching down from under the left ribs to the level of the iliac spine and within an inch of the midline at the level of the navel. The mass was tender. A retrograde pyelogram demonstrated a normal right side, while the left kidney

shadow reached to the iliac spine and a fainter contour to the lower end of the sacro-iliac synchondrosis. The renal pelvis was rather stretched inward and the lower calyx appeared widened and elongated. The loss of its terminal endings and the rounded bulky contour instead of a bulging inward as seen in tumors invading the calyx lumen, made the roentgenologist correctly suspect a large cyst. The examination of the patient had allowed us to make this diagnosis beforehand as the tumor was ideally round and smooth and there was no cachexia or serious constitutional change. The ureter as you can see (x-ray film shown) was forced mesially onto the shadow of the spine. The solitary cyst had the dimensions of a large-sized grapefruit.

At operation, the upper pole of the kidney did not have to be meddled with. A catheter was simply thrown around the narrows between the lower pole and the cyst. This gave a good hold. The lower pole was resected while step by step the kidney was sutured as the division through the parenchyma progressed. Recovery was uneventful.

The second case was a woman, thirty-five years old, who had had three children. She gave a history of four days previous to her first visit at the office of a pain in the right iliac. She appeared rather debilitated, pale and pasty, had no appetite and eating gave her cramps. Her hemoglobin was 70 per cent. The right kidney was markedly ptotic and flopped around the abdomen very freely. It could readily be rotated, as it seemed, in any direction and could easily be brought over the spine into the midline and with its lower half into the greater pelvis. However, this was not the area of the pain. The cecum was bulky and was the seat of the pain. On the kidney was felt a rounded protuberance the size of a tangerine.

In a pyelogram the left kidney appeared normal in size, shape and position. The right one was described as markedly ptotic when the patient was standing and as rotated around its horizontal transverse axis. The upper and lower calyces were foreshortened and superimposed upon each other.

At operation we removed the appendix through a small gridiron incision. It was moderately irritated and on microscopic examination showed recent irritation with groups of round cell infiltration. The kidney was readily brought to this appendectomy wound and through the posterior peritoneum one could see the bluish cyst very clearly. After closing the wound, a lumbar incision was made, almost half of it over the erector spinae. Anteriorly from this muscle, the muscles were pulled apart, widening the triangle of Petit and hardly cutting any muscles. The kidney was brought into the wound but not outside, and the cyst removed by resection of the adjoining kidney parenchyma. The cyst was located in the middle of the posterior surface of the kidney and was the size of a lemon. The kidney wound was sutured and there was no leakage of urine later on, though the pelvis had been opened. However, the wound in the retroperitoneal space was unusually large and required good draining with rubber tissue. The last

(Continued on page 483)

TRANSACTIONS of the MINNEAPOLIS SURGICAL SOCIETY

Meeting of November 5, 1936

MEETING of the Minneapolis Surgical Society was held on November 5, 1936, in the lounge of Hennepin County Medical Society. The meeting was called to order by the president, Dr. Sivertsen, at 8:00 p. m. The following scientific paper was given:

DIRECT HERNIA: COMBINED McARTHUR-"WHITE FASCIA" TYPE OF REPAIR*

L. C. CULLIGAN, M.D., F.A.C.S.

Veterans Administration Facility

Minneapolis, Minnesota

In 1901 Lewis McArthur¹⁸ published his preliminary article on the repair of hernia by fascia taken from the aponeurosis of the external oblique muscle. The technique in brief consisted of taking two strips of fascia, each about five to six inches long, one from the external and one from the internal leaf of the aponeurosis of the external oblique muscle. Leaving these strips attached at the pubis, and using them as suture material, he made his repair. In 1904 he reported ninety-three cases in which he had used his strips in various standard methods of repair, the Bassini, Andrews-Jarrod, McKeon, and Halstad technic, with excellent results with all methods. He reported no recurrences. He concluded his paper as follows: "Whatever the operation used, its success is dependent on the formation of cicatricial connective tissues between the operating surfaces, retaining them where placed. Could we in addition incorporate in such a cicatrix, such white, elastic tissues as those fascial strips present, especially when interwoven as a running suture, then we can certainly feel more confident of its permanency, and of its unyielding character."

His work brought out in the early days, when most surgeons were modifying the Bassini operation, showed remarkable insight into the problem of hernia. In spite of its simplicity and practicality, one gets the feeling from the discussions that followed the rendering of his paper, and from the dearth of reference to it for a number of years, that it has not until recently been given the acceptance that it merits. It is interesting to conjecture why this is so. It was probably due in part to the fear of most surgeons that fascia, like silk or linen, is just another unabsorbable suture material. This feeling has been largely allayed in recent years by the work of many men, Gallie,¹³ Geelig,³¹ Payne,²⁷ Coley and Burke,⁸ Masson,²¹ Burdick,⁷ Bost,⁶ Patterson,²⁶ Fuld.¹² Their work seems to prove that fascial strips, even when transplanted without a pedicle, will continue to live wherever used. However, there is another reason for the infrequent

use of this excellent method, and this appears to be more fundamental. That is the lack of emphasis in medical literature in general on the distinction between the direct and the indirect hernia. Unfortunately their proximity classes them both as inguinal hernia, and too frequently the only distinction made between them is that in the one the sac lays medial, and in the other lateral to the epigastric vessels. Too often in articles on hernia is the repair of the direct hernia dismissed with a brief: "The technic in direct hernia is the same as indirect, except that it is not always necessary to open the sac."

That these are two entirely distinct, pathologic entities should be realized from only a casual study of the etiology and pathogenesis of both. The indirect hernia is the result of failure of proper closure of the funicular portion of the processus vaginalis peritonei, following migration of the testicle into the scrotum. While this type of hernia may not become apparent until adult life, it is generally accepted that basically it is due to maldevelopment in fetal life, and that a preformed sac is always present. Direct hernia on the other hand is a ballooning of, or defect in, the transversalis fascia, which forms the floor of the inguinal canal. The balloon type may be due to a number of causes. It is frequently present in people who are inherently of the weak, asthenic type, whose stomachs and colons ptose. In these, muscles and fascia are loose and lax. It is frequent in aged men with prostatic obstruction. It often occurs in individuals in whom the arching fibers of the internal oblique and the transversus abdominis muscles have a high insertion on the rectus sheath, well removed from the pubis. This leaves the floor of the canal without its needed muscular backing, with only the peritoneum and transversalis fascia as a barrier against the strain of internal abdominal pressure. Direct herniæ also occur following McBurney incisions, where the ilio-inguinal, or ilio-hypogastric nerve has been inadvertently cut.

The other type of direct hernia is quite distinct from the first. In this there is a definite defect in the transversalis fascia of the floor of the canal. This hole is usually small, often not larger than 1 cm. in diameter, and through it will protrude a sac made up of peritoneum and extra-peritoneal fat. This is a rare type of direct hernia, probably due to a congenital defect of this fascia, and is more dangerous than the other, in that its contents are more likely to become strangulated by the tight ring of surrounding fascia.

In addition to the striking anatomical difference between the indirect and direct hernia, one cannot help but be struck by the difference in the clinical results of repair of these types of hernia. Russell,³⁰ Lemaris,¹⁷ et al., have recorded large series of indirect herniæ, in which they have done nothing other than remove the sac, and yet admit of recurrence of only three

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to four per cent. Contrast this with the figures of Andrews and Bissell,³ who collected 1,545 direct hernias taken from various large clinics, and in these the average recurrence rate was 20 per cent.

whether these repairs actually did what was expected of them. Recurrences were examined — Polak,²⁰ Moschowitz,²³ Seelig and Chouke,³² Oudard and Jéquier,²¹ Foss and Hicken,¹¹ and it was found that in most

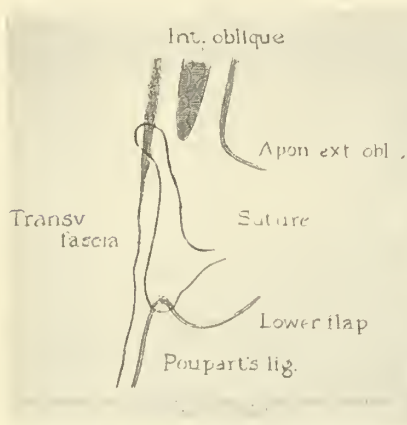


Fig. 1. Diagram from Edmund Andrews' article showing suturing in what appears to be the lower edge of the transversus abdominis muscle.

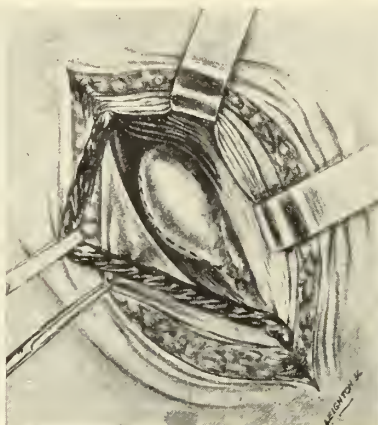


Fig. 2. The inguinal canal has been opened, exposing direct hernia with ballooning out of transversalis fascia. Proposed lines of incision for removal of redundant fascia are shown. The internal oblique muscle is retracted upward.



Fig. 3. Transversalis fascia has been opened, redundant portion removed and upper leaf elevated. Gauze is shown separating peritoneum and extra-peritoneal fat from fascia in the posterior aspect of transversus abdominis muscle.

In view of these facts it is apparent that the direct hernia is entirely different from the indirect. A method of repair is indicated which we can be reasonably sure will hold. For undoubtedly a patient with a recurrence following the repair of a direct hernia is worse off than he was prior to his operation. A primary direct hernia usually is painless and rarely disabling. Unless the direct hernia is very large, the majority need not be operated, except that the presence of the hernia often interferes with patient's ability to secure employment.

The modern treatment of hernia started with Bassini⁵ in 1888. The marked improvement in his results over that of prior workers was likely due in a large part to the fact that he was among the first who had the courage to routinely do a high ligation of the hernial sac. His repair in addition to this consisted in joining the conjoined tendon and the arching fibers of the internal oblique and transversus abdominis muscles to Poupart's ligament. The cord is then rested on this bed and the free edges of the aponeurosis of the external oblique were sutured together over the cord. During the ten years following his article there were numerous modifications of this technic. Of these only two added anything of importance to the original. One, the Andrews,⁴ or Girard modification, which, after the first layer of sutures were put in as in the Bassini technic, sutures the medial leaf of the aponeurosis of the external oblique to Poupart's ligament, and then covers the cord with the external leaf. The other modification was by Halsted,²⁴ who overlapped the lateral as well as the medial leaf of the aponeurosis of the external oblique underneath the cord.

As time went on, doubt began to spring up as to

currences operated on that the red muscle of the arching sphincters of the inguinal canal, the internal oblique and the transversus abdominis muscles, had pulled away from Poupart's ligament. Examination of the showed this structure to be smooth, glistening, and of all appearance untouched. It was also found that when indirect hernia recurred the recurrence was frequently a direct hernia. This, it was felt, was due to muscle and nerve injury from deep suturing into red muscle tissue. Seelig and Chouke³² did animal experiments in suturing fascia to red muscle tissue and came to the conclusion that they would not unite unless traumatized. Physiologists Keith,¹⁶ Hammond,¹⁵ Darling,¹⁰ propounded the theory that the arching fibers of the internal oblique and transversus abdominis muscles were necessary as sphincters of the inguinal canal, and that suture of them interferes with their action and destroys the normal protective mechanism of the canal. MacGregor¹⁹ described a circular muscle sphincter of the internal abdominal ring.

So attempts were made at repairs which would correct these undesirable features. Russell,³⁰ Newton and Searby,²⁴ and other daring spirits merely ligated the sac in indirect hernia, and appeared to get as good results as those doing elaborate repairs. Connell⁹ in 1908, Pitzmann²⁵ in 1921, added to this a reefing of the transversalis fascia near the internal opening of the sac, and did no suturing of the muscles. Andrews¹¹ in 1924 popularized a white type of repair. He used running chromic suture starting at the pubis and extending to the internal ring with which, avoiding the muscle, he sutured the transversalis fascia, or, as he called it, the endo-abdominal fascia to Poupart's ligament. He finished the operation by the Andrews

rd method. MacGregor²⁰ described an operation which he attempts to restore the tonicity of the p of the internal abdominal ring. While it is felt that repairs of this sort may be good

forming in the thigh. That there is more danger of postoperative infection with the Gallie appears to be the case, for Coley and Burke⁸ report 22.4 per cent in their series. In a small series of fifteen recurrent



Fig. 4. Method of inserting fascial suture. Before transversalis fascia is closed Allis forceps grasp tissue along proposed line of suture, using finger of other hand as guide. Transversalis fascia is then completely closed and fascial suture started.

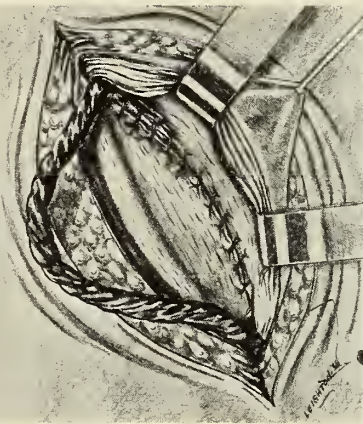


Fig. 5. Internal oblique muscle is still retracted upward. Lower leaf of aponeurosis of external oblique fascia is shown sutured onto the fascia of rectus sheath, and to the arching insertion of the transversus abdominis muscle. No suturing was made in the internal oblique muscle.

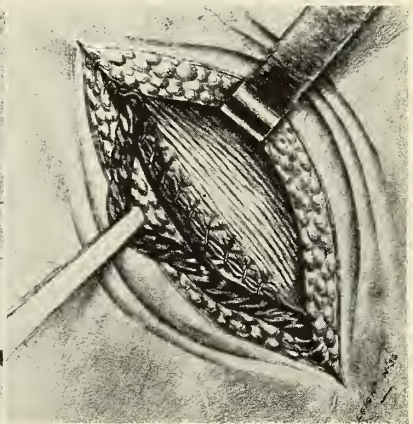


Fig. 6. Medial leaf of aponeurosis of external oblique is sutured over lateral leaf with chromic catgut. The cord has been transplanted external to all layers of fascia. Only snug opening is allowed for exit of cord.

the average indirect hernia, it is our opinion that repairs are ineffectual in the direct, and the large indirect hernia. Surgeons more and more have come to some type of fascia suture in the repair of these herniae. The technic of Gallie,¹³ who used strips of fascia lata for suture material, has become popular in the clinics, and has been used as he recommends, in the direct hernia. That the Gallie technic is excellent in certain cases has been proven beyond doubt. However, to use it in primary, direct hernia, even when the repair rarely seems warranted. Although I have operated a number of large direct herniae, in every case the McArthur technic appeared to be sufficient. The argument against the McArthur operation is that there is not sufficient fascia available locally for the repair. In my experience this has not been so. While there are two strips of fascia available, one from each leaf of the aponeurosis of the external oblique, in the series of 106 direct herniae that I am reporting, only rarely do both strips seem necessary. I feel that one fascial strip, properly placed in tissues that have body and length, with the free end securely anchored, will hold the great majority of direct herniae. The remainder of the repair can be done with catgut. On the other side of the argument there are several things to be said in favor of the McArthur technic. In the first place a strip of fascia taken locally is left attached at the site, a firm starting point is secured for the suture. Moreover the operation time for the McArthur operation is practically that of catgut, while the Gallie requires considerable more time and more assistants. In addition the Gallie operation leaves the patient with two incisions, with the possibility of muscle hernia

hernias done with the Gallie method, we have had three infections, or 20 per cent, in contrast to fifteen recurrent herniae done by the McArthur method, in which we have had no infections. This was emphasized recently in two patients with bilateral, recurrent hernia. In both one side was done by the Gallie technic, and the other side by the McArthur. Both Gallie types became infected and drained for weeks, finally healing without sloughing fascia strips, however. Both sides done by McArthur method healed normally.

While McArthur recommended no particular technic, in the direct hernia, as in the repair of ventral hernia, with which the direct hernia has much in common, the thing of paramount importance is substantial tissue to hold fascial sutures. To expect the thin, lax transversalis fascia of the floor of the canal to do much holding seems futile. Edmund Andrews¹ in several articles on the repair of both direct and indirect hernia, emphasis especially the use of this fascia, or, as he calls it, endo-abdominal fascia. I would like to quote a few lines from an article by Seelig³¹ referring to the operation of Edmund Andrews:

"I have been less fortunate than Andrews, however. I have not always been able to find the transversalis fascia. More's the pity, I have very often been unable to locate and therefore to use it in just those instances in which its support was more desirable—in obese patients with direct hernia. In doubt as to whether or not the fault lay in my own technic, I communicated with Dr. S. E. Whittnall, the director of the department of anatomy of McGill University, who is particularly interested in fascia. In his answer he said:

"The transversalis fascia is one of the things which I am often baffled to demonstrate satisfactorily to the students. My demonstrators confess to the same difficulty. Some of my surgical col-

leagues say they can readily distinguish the structure, but others say they cannot. I note that you refer to this fascia as "elusive" with which I agree."

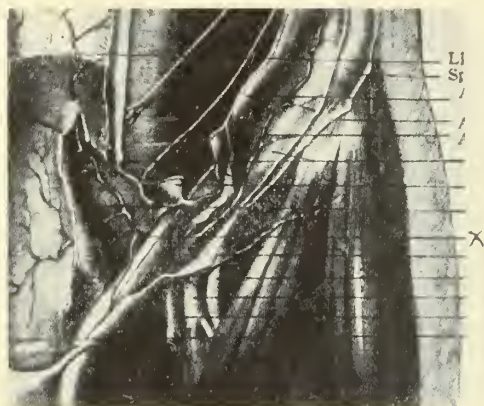


Fig. 7. Cut from Callander's Surgical Anatomy showing cremasteric vein marked "X" joining onto the inferior epigastric vein.

Certainly we cannot depend on anything which is elusive in the repair of direct hernia. Moreover, from a study of the diagram of Andrews'¹ article, it seems likely that he too is using the firm, fascial aponeurosis of the transversus abdominis muscle instead of a structure which he described as having "no muscular attachments, and, therefore does not tend to move with respirations and bodily movements."²

While in my experience the transversalis fascia is always present, it frequently is so thin as to be difficult to demonstrate as a fascial layer. However, as one follows this higher and comes to the arching fibers of the transversus abdominis muscle, one notices that at their junction there is a fascia both on the anterior and posterior layer of this muscle that usually has a body to it that is reassuring. This structure in its medial two-thirds is chiefly fibrous tissue. In the lateral one-third of the canal often the muscle fibers as they insert into this aponeurosis become a prominent feature. However, even in this portion the fascia layer on the posterior surface is fairly firm, and throughout the structure of the muscle there is such an intermingling of muscular fibers and fascial tissue that by spreading the muscle fibers one can find tissue that has a very definite solidity into which one can put fascial sutures with a feeling of assurance that they will hold. In addition, the crescentic insertion of the aponeurosis of this muscle onto the rectus sheath can also be utilized for a second line of sutures, if, when imbricating the leaves of the aponeurosis of the external oblique, one sutures the lower leaf first.

The material on which this thesis is based consisted of 400 hernia operations which I have performed at the Veterans' Hospital, Minneapolis, during the past five years. In 171 of these patients who had either direct, large indirect, or recurrent hernias, I have used the McArthur fascial strips. One hundred and six of these had direct hernias. In order to get comparative statistics I have sent follow-up letters to these and

also to all the others with direct hernias, totaling 4, operated upon by myself and various other members of the surgical staff since 1929, in whom the catgut method had been used.

Of the 106 patients on whom the McArthur technique was used we have had sixty-nine replies, and of these six; or 8.6 per cent, have reported recurrences. Ten of these I have re-operated. In one, while the original hernia was a direct hernia, at the second operation he was found to have a small, indirect hernial sac incorporated in the cord, which likely had been overlooked at his first operation, and subsequently had become larger. In the other there was a small fascial defect at the exit of the cord, through which a small fat tab protruded. No hernial sac could be demonstrated. In neither was there a recurrence of a direct hernia. In the cases operated by the catgut technic we have had eighty-eight replies, and of the twenty-six, or 29.6 per cent, have reported recurrences.

These statistics are valueless as an actual index of the number of direct hernias that have recurred, for several reasons. In the first place we were unable to locate by mail a large number of patients. Secondly, it is generally accepted that hernia statistics are valueless unless the patients are personally examined. Thirdly, in this group the answers are liable to be swayed by the hope of getting compensation, and as it is felt that the dissatisfied group with recurrences are more likely to send in their reply than those in whom good results were obtained. However, from a standpoint of comparative statistics, we feel that they are accurate and have definite value for the same follow-up method was used in both series. The important point is that 3.4 times as many reported recurrences after catgut method as after McArthur technique.

A possible source of error in comparing these two types of cases is that those done by the catgut method are older than those in which the McArthur technique was used, for the majority of the latter have been done during the past two and a half years. However, in the statistics gathered by Erdman, he found that of his direct hernias that had occurred, 100 per cent had come back within two years, the majority before six months. In this series only five are less than six months old.

The method of repair which I have been doing utilizes the McArthur principle and joins white fascial structures in a manner which differs somewhat from other so-called white fascia types of repair. It is one which makes for safety in securing the firm fascia on the anterior and posterior aspect of the transversus abdominis muscle near its arching border with the firm running fascial suture. It also utilizes the strong aponeurosis of this same muscle close to its union with the rectus sheath for a second line of sutures. I avoid suturing into the arching fibers of the internal oblique muscle primarily because it presents such poor material, and second because its function as a sphincter of the inguinal canal is interfered with by suturing.

The aponeurosis of the external oblique is opened well away from the external inguinal ring to avoid interference

to the ilio-inguinal nerve. The first slit is made with the upper pillar of the external ring. This is a broad, lower flap to the lower leaf of the aponeurosis and makes for a straight lower edge of the fascial strip. The McArthur fascial suture which we use is about $\frac{3}{4}$ -inch in width. In freeing this from the upper leaf, one should always start near the pubis. In that way one can leave sufficient width at the point to give a firm attachment. It is then split from the aponeurosis in a line of cleavage until the muscular fibers of the external oblique are reached. If two strips are needed, the second is taken off the lower leaf. The end of the fascia is then threaded through a Masson fascia needle and tied with sticktie of cotton, or silk.

Two elliptical incisions are then made in the transversalis fascia in the floor of the canal, and the remaining fascia between them removed. Whether or not it is necessary to open the peritoneal cavity and remove excess peritoneum and extra-peritoneal fat will depend on the size of the hernia. In the average case this step is not necessary. The upper leaf of the transversalis fascia is then elevated, and with a gauze-covered finger, the extra-peritoneal fat is pushed away from the fascia on the posterior aspect of the transversus abdominis muscle above its arching lower border. With the index finger of left hand as a guide, the Allis forceps grasp the tissue of the proposed line of suture, to hold it away from the peritoneum. The edges of the transversalis fascia are sutured together with running chromic suture. This is not expected to do any holding, but merely prevents the extra-peritoneal fat from pushing itself through the suture layer. This suture is started at the pubis and extended laterally.

The first stitch of the fascial suture is started as close as possible to the pubis joining Poupart's ligament to the conjoint tendon until this latter structure is split into its component parts, the internal oblique and the transversus abdominis muscle. From this point laterally the red fibers of the internal oblique muscle are retracted upward and the suturing is continued in the fascia formed by the covering of the transversus abdominis muscle and the transversalis fascia. With the Allis forceps holding this tissue away from the peritoneum, the fascial sutures can safely be split with each stitch, and in that way the firm attachment on the posterior as well as the anterior surface can be used to good advantage in holding this suture in place. The fascial strip suture is completed, leaving only a small, snug opening for the exit of the cord. The suture is then sutured into Poupart's ligament with fascial needle and must be careful not to suture successive stitches in the same plane of fibers. By doing this, one will avoid making a split in this ligament. The best method which we have found for anchoring the fascial suture is to bring out the final stitch in some good fascial structure near the last point of suture. After that, the protruding remnant of fascia is split longitudinally. One-half of this is then rethreaded on the needle and a second bite taken in the aponeurosis, following which

the two loose ends are tied with a square knot. As there is so little fascia left it is usually necessary to make this tie with mosquito forceps. The loose ends are then tied down with chromic catgut. An occasional chromic tie is made along the line of fascial suture to further anchor it.

Some men make use of the last portion of fascial suture to encircle the cord. However, in direct hernia as our weakness is entirely medial to the cord, it is felt that whatever remains of the fascial strip can be used to better advantage in suturing inside the internal ring and in utilizing enough of the strip to make a firm, square knot.

The next step in the repair is different from the usual method of plicating the flaps of aponeurosis of the external oblique. The utilization of the lower flap first was emphasized by Skillern²³ in 1922. It was also advocated by Maxeiner²² in 1928. They both, however, sutured the lower flap external to the internal oblique muscle bundle. However, there is firm fascia near the crescentic insertion of the transversus abdominis muscle onto the edge of the rectus muscle that is easily accessible which can be utilized to better advantage than by trying to cover the bulky fibers of the internal oblique with the lower flap. I use a chromic suture in uniting these structures, unless two strips of fascia are taken. If so, the second strip is used here. As we made our initial incision in the aponeurosis well away from Poupart's in line with the upper pillar of the external ring, we have left sufficient lower flap to give plenty of tissue for this plication. This lower flap should be held up taut to take up slack while putting in this line of sutures. After all, as our objective is to unite Poupart's ligament to the structures above it, we feel that this double line of sutures, one taking the strain off the other, is better than a single, and will make for a firmer union than we can get by using the Andrews imbrication method which brings the upper flap down first. The final step consists of bringing the upper flap down over the internal oblique muscle and underneath the cord, suturing its free edge to the outer surface of the lower flap of the aponeurosis adjacent to Poupart's ligament. This transplants the cord external to all layers of fascia. To avoid too much tension this upper flap usually must be liberated from its underlying structures for a short distance. When this is done it can be brought down without undue tension.

There is just one more point which I wish to bring out. As one can note from the accompanying diagram taken from Callander's Anatomy, the cremasteric vein enters the inferior epigastric vein near the internal ring. Routinely for both direct and indirect hernias, I have been ligating this vein. For we have noted that after repairing the floor of the canal this vein almost invariably is kinked and becomes distended and thrombosed. As hernias carry a relatively high rate of postoperative emboli, it is felt that this vein, even though small, containing loose thrombi might be a factor in causing postoperative emboli. Whether or not this is true cannot be backed by actual statistics.

However, on a theoretical basis it seems to be a logical procedure. A small nerve accompanying this vein should be avoided.

In conclusion, first we have shown that a repair of direct hernia using McArthur fascial strips carries less recurrence than the catgut method. Second, we have described a technic which combines the McArthur strip with a strong, white fascia method of repair and utilized the fascia on the anterior and posterior aspect of the transversus abdominis muscle with safety.

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Discussion

DR. CULLIGAN: In answer to Dr. Campbell's question in regard to maintaining the obliquity of the inguinal canal, I feel that this probably is more important than the indirect hernia than in the direct hernia. Naturally the point of weakness is going to be around the point of the cord. However, I feel that in direct hernia the aponeurosis of the external oblique can be used to better advantage in repairing the floor than by using it to maintain the obliquity of the inguinal canal.

We have also been using the McArthur fascial strips in large, indirect hernia. Moreover we have been using it whenever possible on recurrent hernias. Of course, frequently it is not possible to get fascial tissue in a recurrent hernia locally, and you have to go to the thigh for it. In all types of cases the wounds appear to heal as smoothly where fascia is used as in those cases in which a catgut repair is made.

E. A. REGNIER, *Secretary*

Meeting of April 1, 1937

THE regular monthly meeting of the Minneapolis Surgical Society was held on April 1, 1937, in the lounge of the Hennepin County Medical Society rooms. The meeting was called to order by the president, Dr. Ivar Sivertsen. The following scientific program was given:

STERNOCLAVICULAR DISLOCATIONS

Report of Case

H. M. LEE, M.D.

Minneapolis, Minnesota

Dislocation of the clavicle at the sternum is of interest chiefly on account of the infrequency of its occurrence. There may be degrees of displacement of the sternal end of the clavicle varying from a slight displacement to a complete dislocation, the sternal end tearing through the joint capsule. It is

probable that many slight displacements of the clavicle at the sternum are overlooked due to absence of any conspicuous deformity and to absence of marked symptoms. Such mild displacements are probably the result of relaxation of the sternoclavicular joint capsule and may be traumatic or the result of other causes such as aortic aneurysm, spinal caries and diseases of the sternoclavicular joint itself.

The sternoclavicular joint is a diarthrodial arthrosis allowing free range of motion in all directions. The free movement of the clavicle on the sternum is afforded by the double synovial joint with its interposed articular disk. The shoulder girdles which carry the upper extremities through their wide ranges of movement are attached to the skeleton only through the joints. The strength and elasticity of these joints is indicated by the infrequency of their dislocation in contrast to the exceedingly common occurrence of fracture of the clavicle. The clavicle is held in place at the sternum by numerous well defined strong ligaments.

es: the anterior and posterior sternoclavicular ligaments, the intraclavicular ligaments which extend between the clavicles with fibers attached to the manubrium of the sternum, and to the costal cartilage of the first rib below.

The traumatic sternoclavicular dislocations are produced by forcibly pressing the shoulder backwards, or forward, or by pulling the shoulder outward. These movements tend to force the sternal end of the clavicle either upward or forward. Pressing the shoulder backward with sufficient force to rupture the sternoclavicular ligaments results in a forward displacement of the sternal end of the clavicle. Depressing the shoulder violently forces the clavicle down against the first rib which then acts as a fulcrum, pushing the sternal end of the clavicle upward. The sternal end of the clavicle may be dislocated backward or downward but this is so infrequent that it is hardly worthy of discussion. The most common cause of forward or upward displacement of the clavicle at the sternal joint is probably falling on point of shoulder.

The case which I wish especially to present was injured in such a manner. He sustained an upward dislocation of the clavicle at its sternal end. It was a reduced dislocation which was repaired surgically.

Before presenting this case, however, I wish to present another case for your consideration. This man on September 25, 1936, was working with a pick. The pick struck a hard object, which jarred his left hand, causing pain localized in the region of the wrist at the base of the left thumb. After working for about ten minutes this became so painful that he quit work. He was referred to our office. X-rays of the wrist and wrist were negative. He had no other complaints. On September 29, four days later, when he returned to our office, he complained of pain in the region of the left shoulder and clavicle and sternoclavicular region. He states that this pain had appeared suddenly during the night before, September 29, three or four days after the injury to his wrist. He states that pain appeared as he rolled over in bed. On examination September 29 the left sternoclavicular joint was very prominent, with redness and swelling about the joint and there appeared to be a definite displacement upward of the clavicle at the sternum. This deformity could not be entirely corrected by pressure or manipulation. I advised conservative treatment. On September 3, 1936, he was examined by a competent orthopedist in Minneapolis who suggested that surgical repair might be indicated. He was later seen by an orthopedist in St. Paul who advised against any surgical procedure. His condition gradually improved. Sometime in January he returned to work wheeling cement in a wheelbarrow. This he was able to do except at the wheel struck bumps such jars caused considerable pain in the damaged joint, so he discontinued work and some time later secured other type of work. On March 22 he volunteered to help a police officer chase burglars and accidentally collided with the officer's car, sustaining a fracture of the left clavicle, in which he is at present disabled. An interesting

fact about these sternoclavicular dislocations is that a complete reduction is not essential to good function in the arm and shoulder, but obviously a considerable period of disability is required for a relaxed joint capsule to heal to a degree where pain is not prominent. The interesting question in this particular case is, in my opinion, whether the dislocation of the clavicle occurred at the time of the original injury, or whether it occurred three or four days later, or what connection may exist between the apparent dislocation and the alleged accident.

The other patient whom I am presenting was injured on July 23, 1932. He fell onto the point of the right shoulder from a height of about four feet. He suffered an upward and anterior dislocation of left clavicle at the sternum. The dislocation was easily reduced but could not be maintained. Conservative treatment was attempted for several months, an attempt being made to maintain the clavicle in reduction by adhesive straps and pads over the sternoclavicular joint. On October 25 an open reduction was performed. The joint capsule was found to be completely torn, the joint cartilage remaining attached to the end of the clavicle. Drill holes were made through the clavicle and sternum and reduction maintained by passing through these drill holes Kangaroo tendon. The arm was bandaged in adduction with shoulder somewhat elevated and held in position with a plaster dressing. He was discharged from the hospital on November 18. The cast was removed on November 21 and the arm was carried in a sling. Shortly thereafter gradually increasing motion was permitted. I believe this man has made a good recovery so far as the sternoclavicular dislocation is concerned but he has continued to have some impairment of function in the shoulder joint. This, I believe, is due to other causes. He undoubtedly sustained considerable soft tissue damage about the right shoulder at the time he fell, which frequently results in prolonged if not permanent impairment of function about the shoulder joint. This man also subsequently developed neuritis and arthritis involving several joints in both arms and legs. This may also have contributed to the impaired function in the right shoulder.

Discussion

DR. GEORGE R. DUNN.—It so happened that I had an opportunity to see this man before the operative procedure was done and Dr. Lee has certainly obtained an excellent result. There was practically a complete dislocation at the sternoclavicular joint, which was giving the man a great deal of pain on any movement of the arm. He also had a brachial plexus injury which seems to account for the limitation of movement at the shoulder joint at the present time.

I agree with Dr. Lee that the use of fascia lata or chromic catgut is better in the fixation of these joints than the use of pegs. In deciding which suture material is better to use, fascia lata or chromic catgut, one must be guided by the findings at the time of exploration. If the capsule is badly torn and can not be well sutured, then the use of fascia lata to repair the defective capsule is probably indicated. On the other hand, if the capsule is fairly well intact then the use of chromic catgut is probably entirely sufficient.

DR. D. A. MACDONALD.—Of 775 dislocations at Cook County Hospital, 73 were of the clavicle, an incidence

of 9.4 per cent or approximately one of the very ten dislocations admitted.

The presternal dislocations of the clavicle represent about 1 per cent of all dislocations of the body.

The clavicle acts as a prop, pressing against the sternum to hold the scapula and shoulder joint back and out from the chest, so as to permit a full action of the arm. Then the most important object of treatment is to restore the full usefulness of the arm, particularly of the shoulder.

There is a great tendency to stiffness of the shoulder joint in patients over forty years of age. Therefore, we must avoid fixing this joint by any apparatus.

Some of the older methods of treatment, such as the Desault dressing, caused a marked degree of pressure on vessels and nerves with the resulting ill effects, as well as a stiffness of the shoulder joint when the dressing was kept on too long.

I believe in the conservative treatment as carried out by Dr. Lee in his case previous to the operative treatment, which later became necessary.

One may use a broad piece of adhesive superimposed on felt over the joint, the adhesive to be strapped across the anterior chest and shoulder. Then figure-of-eight Ace bandages are placed across the back to hold the shoulders out and backward. This may maintain reduction.

There is a treatment, besides those mentioned, of bringing the shoulder forward and inward after jamming the clavicle down into the joint.

But when we consider that the integrity of the sternoclavicular joint depends on the ligaments, and when they are ruptured there is nothing to hold the clavicle in place, operation may become the form of treatment through necessity rather than choice.

Of course, in the old cases operation is the only form of treatment.

DR. HARVEY NELSON.—We have recently had three detachments at the sternoclavicular joint. In the first patient we kept a clavicular cross applied for about two months and the sternoclavicular joint finally tightened up. The second patient tightened up in five months. The third patient, after a year, still had a lot of pain in the sternoclavicular joint radiating into his neck. On this case we did an open operation and at the time of the operation found that the articular disc was almost completely detached and was acting more or less as a wedge in preventing proper approximation between the sternum and the clavicle. It was necessary to remove the articular disc in order to obtain a proper approximation of the joint. Incidentally, we used rustless wire to hold the sternum in position with the clavicle and it worked out very well. The wire is still in and we intend to leave it in permanently unless it sets up some sort of irritation. We felt that the rustless wire was a distinct advantage over catgut in that it permanently held the sternum in proper apposition.

DR. H. M. LEE (closing).—So far as I know there has been very little recommended on the subject. There is very little in the literature. There is no reference to silk, but to Speed's ivory peg. In regard to Dr. Nelson's question about silver wire: I have not had any experience with it, since this is the only case I have sutured. In looking through the literature I found that Norman Duggan of Worcester, England, in 1930 reported a case just like Dr. Nelson's. In answer to Dr. Bulkley, I might say that you can apparently have a partial dislocation and still get along perfectly well. In time the patient will even have good function in spite of the fact that he has remaining deformity.

SUCCESSFUL SURGICAL TREATMENT OF PERMANENT TORTICOLLIS

MARTIN NORDLAND, M.D.

Minneapolis, Minnesota

The normal upright position of the head is maintained by the associated action of the muscles on the sides of the neck. Temporary or permanent contraction of the sternomastoid with implication of the deeper muscles, such as the scaleni, alters the position of the head. Torticollis is the name given to this altered position. Chronic contraction of either lateral group of muscles inclines the head to the affected side. The head is tilted and rotated until the chin projects forward toward the unaffected side. The ear on the affected side, as a result approaches the corresponding shoulder.

Transient torticollis may be caused by rheumatism, exposure to cold, acute myositis (myogenic), limitation of movement from inflamed cervical glands (reflex), limitation of movement from spinal accessory injury (neurogenic) and spasmodic torticollis which occurs in neurotic individuals. Symptomatic treatment will suffice in this group of contractures.

In the group of permanent contractures, congenital torticollis is the best example. In this class the muscle cannot be lengthened to normal. The muscle may have been ruptured at birth with subsequent scar formation. In this type and other forms of permanent contracture the muscles become hard and tendinous and stand out prominently at the internal head. There is a definite interval between the sternal and clavicular attachments of the sternomastoid muscle. When in the aggravated cases the deep muscles also become rigid and contracted, relief is obtained only by a surgical procedure.

The patient operated upon was a female, married, and sixty-one years of age. About fifteen years ago, after a "nervous breakdown," she first noticed a tremor of her head, which persisted and became increasingly troublesome. This was especially troublesome when she became overtired. A spasmodic pain in the left suboccipital region began to cause much distress and she noticed a prominence of the left sternomastoid muscle.

The painful spasms and fixed position of the head caused her to seek relief from a neurologist. Periodic "injections" gave temporary cessation of the pain to the contraction of the occiput to the left continued without change. Although the patient has had very little pain during the past five years the abnormal position of the head has caused her much trouble and embarrassment. Because of this she came for relief.

Examination revealed a vigorous woman of a cheerful disposition. Her head was tilted and contracted so that the ear on the left side approached the left shoulder and the chin pointed toward the right shoulder. She was unable to change the position of her head voluntarily and it was impossible by manipulation to place the head in a normal position. The left sternomastoid stood out prominently and, so far as one could determine, all of the left posterior group were also

state of contraction. A general physical examination, including a Wassermann, was negative. X-ray examination of the servical vertebræ revealed an osteoarthritis involving the articulation between the bodies of the lower cervical vertebræ.

The operation, a tenotomy, was performed through an oblique incision across the lower part of the sternomastoid muscle on November 23, 1936. The fascial sheath was divided up to the carotid sheath and the spinal accessory nerve was sectioned in the anterior cervical triangle.

The sternomastoid muscle is enveloped by a duplication of the superficial layer of the deep cervical fascia. The sheath varies in structure: it is thick and fibrous above, passing over the inferior pole of the parotid gland and in the retromandibular fossa, and it is thin and transparent in its lower attachments. The eleventh cranial accessory nerve enters the substance of the muscle 4 cm. inferior to the mastoid process. The deep ligaments to the nerve are the posterior belly of the digastric muscle and the internal jugular vein. The nerve passes laterally and backward, crossing the vein obliquely.

The sensory nerves which are most exposed to injury when tenotomy is performed are: (1) the great auricular, which is found at the posterior border of the sternomastoid near the spinal accessory; (2) the superficial cervicals; and (3) the descending supraclavicular branch of the servical plexus. The spinal accessory is a motor nerve found in the upper part of its course in the anterior cervical triangular and further down as it runs under the sternoclavicular muscle to the posterior triangle. It takes a course obliquely across the floor of the posterior triangle and is best seen just outside of the internal jugular vein near the posterior belly of the digastric muscle and below the prominent transverse process of the atlas. Pinching of the nerve causes a twitching of the trapezius. This assists in its recognition.

The sternomastoid muscle gets its nerve supply from a branch of the spinal accessory and the second and third cervical nerves. The trapezius muscle is innervated by the spinal accessory and the third and fourth cervical nerves. Paralysis of the trapezius, which occurs after the severance of the spinal accessory, causes only a slight drooping of the shoulder with a slight loss of power in the shoulder muscles.

For good results the operation should consist of a tenotomy of the sternomastoid after it has been exposed through an oblique incision over the lower portion of the muscle. To get complete relaxation the investing fascial sheath should be dissected free from the fibers of the muscle far enough to include the carotid sheath. This will prevent contraction from scar tissue and for complete results the spinal accessory nerve should be sectioned before it enters the substance of the sternomastoid muscle.

Discussion

DR. L. H. FOWLER.—Nearly ten years ago we had a young woman patient nineteen years of age, with a congenital torticollis. The head was drawn markedly to one

side and there was a definite asymmetry of the face. In looking over the literature at that time we found that most writers claimed that unless the nerve supply was severed one would not get permanent relief of the condition. However, we only severed the sternomastoid at the sternal and clavicular attachments and kept the head in the opposite direction in a cast. After six weeks this was gradually released. Our patient obtained a very satisfactory result.

E. A. REGNIER, *Secretary*.

"Arthox" or "Sulfiodoxygenia"

According to an advertising circular distributed by the Standard Laboratories, Inc., Boston, in 1935, Arthox is "a scientific medicinal formula," and "analgesic, specially prepared to aid in the relief of the muscular aches and pains of *rheumatism and arthritis*." The circular, which is apparently addressed to the public, gives no hint as to the composition of Arthox. An examination of the advertising material received in 1936 indicates that Arthox—now embellished with the high sounding but meaningless synonym "Sulfiodoxygenia"—is sold "on physicians' prescription only." The constituents, according to information given by the manufacturer in 1935, are alcohol 2 per cent, Burnham's Soluble Iodine, anise, sassafras, glycyrrhiza, sarsaparilla, methyl salicylate and sodium salicylate. Apparently the promoters of Arthox (also called "Sulfiodoxygenia") and, sadly, enough, some physicians too, are of the opinion that such medication possesses enhanced value when it masquerades under some such title as "Arthox" or "Sulfiodoxygenia." Burnham's Soluble Iodine, one of the claimed constituents of Arthox, is the subject of an unfavorable report by the Council on Pharmacy and Chemistry appearing in *The Journal*, July 1, 1933, p. 33. (*J. A. M. A.*, Feb. 13, 1937, p. 579.)

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

(Continued from page 474)

of the rubber drains were removed on the 12th post-operative day. The fat was thoroughly removed from the quadratus and posterior muscles and from the posterior surface of the kidney to guard against a recurrence of the kidney floating about. After the operation she was given 550 c.c. of blood. Since the patient left the hospital I have not seen her as yet. I feel quite sure that this kidney will not become troublesome any more on account of an abnormal mobility.

A third case may be seen here. (X-ray film shown.) The pyelogram was kindly loaned to me by Dr. Medelman. The outlines of the cyst are unusually clearly seen. They measure six inches in the transverse diameter. Downward the shadow reaches the upper level of the iliac crest.

These solitary cysts of the kidney are usually at one of the poles and most frequently at the lower. Their relation to polycystic kidneys is problematical, and surely in their clinical course they differ greatly from polycystic kidneys. Their origin lies probably in some congenital malformation, possibly in an early inflammatory process, but this latter is pure conjecture based more or less on the frequently seen multiple small cysts in chronic interstitial nephritis.

The meeting adjourned.

A. G. SCHULZE, M.D., *Secretary*

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

INFANTILE PARALYSIS AND CEREBRAL DIPLEGIA. Methods Use for the Restoration of Function. Elizabeth Kenny. With Foreword by Herbert J. Wilkinson, Professor of Anatomy and Dean of the Faculty of Medicine, University of Queensland. 125 pages. Illus. Price, £1/1/-, cloth. Sydney, Australia: Angus & Robertson, 1937.

PERSONAL HYGIENE. C. E. Turner, M.A., Dr.P.H., Professor of Biology and Public Health in Massachusetts Institute of Technology, etc. 335 pages. Illus. Price, \$2.25, cloth. St. Louis: C. V. Mosby Co., 1937.

PHYSICAL THERAPEUTICS METHODS in Otolaryngology. By Abraham R. Hollander, M.D., 442 pages with 189 illustrations. Price \$5.00. St. Louis: C. V. Mosby Co., 1937.

Eleven authors contribute the twenty-four chapters in this volume. Part I, comprising 148 pages, describes in detail the physical and electrical principles underlying the therapy. This should be a useful reference for the physician interested in the theory and technic of this work. Part II, covering 167 pages, deals with the use of the physical agents in otolaryngology. The enthusiasm of the author for treatment by physical methods is obvious. However, no discrimination is made in the text between those procedures of definitely proven merit and those which have proven to be of very doubtful value, or entirely useless and perhaps harmful. Part III in 76 pages discusses neoplastic and miscellaneous problems. A chapter in this section by C. L. Jackson seems to digress considerably from the text in a discussion of endoscopy.

The volume is well illustrated and well written.

LAWRENCE R. BOISE, M.D.

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PITFALLS IN THE MANAGEMENT OF HAND INFECTIONS*

MICHAEL L. MASON, M.D., F.A.C.S.

Chicago, Illinois

IN the management of any illness the physician is confronted with two problems: first, that of bringing the disease under control; second, that of maintaining or of re-establishing function. The difficulties in meeting these two problems vary with the disease and with the patient. Under some circumstances, once the disease is under control, functional return is rapid and spontaneous. In other instances the control of the disease may be simple, but functional restoration of the patient may present the most difficult of problems. In still other instances, not only does the disease call for skilled, competent management, but functional restoration may offer as difficult, or even more difficult, a problem than the disease itself. It is to this latter category that the hand infections tend to belong. True enough, the control of the infection and restoration of function are in many instances simple and easy. However, the surgeon who loses sight of the functional requirements of the hand will often find himself in difficulties which could have been avoided had these requirements been observed.

In a discussion, therefore, of the pitfalls in the management of hand infections, we may distinguish those which have to do with the care of the infection *per se* from those which concern the functional maintenance and restoration. This distinction is merely one of convenience of discussion, since it must be emphasized that from the onset of treatment the functional requirements of the hand must be constantly kept in mind.

The difficulties which have to do with the

management of the infection *per se* are those common to all infectious processes, modified by certain considerations due to anatomic peculiarities of the hand. The basis for Kanavel's monographic contribution on infections of the hand was a careful anatomic study of the extremity. A thorough knowledge of this anatomy is necessary to the intelligent diagnosis and treatment of the hand infections. In possibly no other region of the body has a careful anatomic study yielded so much indispensable information, or so clarified a one-time baffling problem.

This is scarcely the occasion to discuss in detail the factors which predispose or contribute to the development of an infection previous to the time the patient consults the surgeon. There are, however, certain interesting observations which we have made in the study of a group of cases.

The initial introduction of very virulent organisms into minor wounds is accountable for a certain number of the most severe infections. Many of these occur in physicians and nurses who in the course of their professional duties injure themselves on needles, pins, knives and scissors contaminated with virulent organisms already acclimated to growth in human tissues. The human bite injury is also characterized by the inoculation at first instance of organisms already accustomed to human body fluids, and the very malignant course which these infections take is well known. Neglect by the patient (Fig. 1) of minor injuries such as cuts, scratches and abrasions also accounts for a certain number of cases of infection. The minor injuries of everyday life are so seldom followed by serious infection that they are usually ignored. However, the

*From the Department of Surgery, Northwestern University Medical School, and Passavant Memorial Hospital, Chicago. Presented at the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 5, 1937.

experience of men in large industrial medical services has shown that prompt first aid treatment of even the most minor hand injuries very materially diminishes the incidence of the se-

of a severe infection from what would have been an insignificant one. Squeezing or pricking of tiny follicular infections is a most prolific source of carbuncles and other types of sub-



Fig. 1. Acute spreading infection from neglected minor laceration of right middle finger. Wound washed and painted with tincture of iodine, but not protected by dressing. Two days later hands became very soiled, and that night swelling and pain in middle finger kept patient awake. Entered hospital following day with diffuse cellulitis of finger, lymphangitis, and cutaneous gangrene at site of injury. Pure hemolytic streptococcus infection.

(a and b). Nine days after injury. Diffuse cellulitis of finger, gangrene spreading from site of injury on radial side of finger, lymphangitis still present. White blood count 28,600; temperature peak 103.4.

(c and d). Fourteen days after injury. Gangrene has extended to middle phalanx, localization taking place in tendon sheath and over dorsum of hand. White blood count, 23,650; temperature peak, 101.4.

(e and f). Six weeks after injury. The tendon sheath and middle palmar space have been drained and tendon removed. White blood count and temperature normal. Finger subsequently amputated at proximal interphalangeal joint.

(g and h). Sixteen months after injury.

vere disabling infections. Neglect to keep an open injury covered with a protective dressing until healing has taken place may favor secondary infection of wounds which were not originally seriously contaminated. The blister which follows burns of the fingers may be knocked off during the day's work, a tiny healing laceration may be reopened, or the protective crust over an abrasion may be accidentally removed unless they are kept covered until they are healed. Ill-advised attempts at self treatment on the part of the patient may contribute to the development

taneous infections, and of severe spreading infections. Attempts to squeeze pus from infected wounds must have an unfavorable effect on the infection. Secondary injuries to infected wounds belong in the same category as the usual attempts at self treatment; in each case the local resistance of the tissues is lowered by trauma. These factors in the etiology of hand infections are ones over which the surgeon has no control, and can be remedied only by the education of the laity in the dangers of neglect and self treatment.

In the surgical management of infections of the hand there are certain essential factors which make for success. The surgeon must be guided by the first principle of surgery—to do no harm—and by the advice of Paracelsus that the surgeon's duty is to assist nature, that she suffer no injury from without. An understanding of the tissue reactions in the presence of infection is the first essential to successful management. The prompt institution of correct treatment is the second essential factor, and the preservation of the function of the hand is the third.

When an infection is first seen, its nature could be diagnosed, the possible complications foreseen, and the correct treatment started at once. It is a mistake to assume a fatalistic attitude toward infection; it is slight solace to assume that an infection is mild or severe regardless of our management at the start. It is of the greatest importance that the localized infections be distinguished from the spreading ones at the onset, since the treatment in the two conditions is diametrically opposed. In the case of the localized infection, drainage is indicated, whereas in the spreading infection, conservatism is demanded and active surgical intervention is absolutely contra-indicated. In the localized minor infections, such as felon and paronychia, the correct incision should be made early, before a chronic subungual infection or osteomyelitis develops. In the case of the major infections, delay in proper treatment may cost the patient the function of his hand, or his life. Major fascial space infections, and, above all, suppurative tenosynovitis, demand early incision; procrastination spells disaster. In the case of the acute spreading infections—lymphangitis, diffuse cellulitis, et cetera—the immediate institution of conservative treatment gives the patient his best, and often his only, chance of survival.

The problem therefore of when, how, and where to secure drainage confronts the surgeon at the onset, and errors in judgment may entail serious consequences. The premature incision carries with it probably the greatest potentialities of real harm.

The premature incision, or incision into a non-localized infection, or into the site of origin of an acute spreading infection, may prove disastrous. Any one of us could cite many examples of serious or fatal infections which have fol-

lowed the injudicious incision of a throbbing, painful finger, incisions which have yielded no pus and which were followed by a chill, rapid rise in temperature, increase in toxemia, and



Fig. 2.

Fig. 3.

Fig. 2. Persistent sinus and osteomyelitis of distal phalanx of left thumb following midline incision for felon; two months' duration.

Fig. 3. Result of midline incision on volar and dorsal surface of finger and through-and-through drainage of palm for tenosynovitis and middle palmar space abscess. Slough of tendon, osteomyelitis of metacarpals, and extensive cicatricial contractures.

rapid extension of the process by way of the lymphatics and cellular tissues. The temptation to incise, often at the insistence of the patient, is frequently too great for us to resist. The desire to do something, and the unwillingness to assume what Kanavel has called an attitude of "masterful inactivity" have cost many patients a hand, or a life. In the spreading infection (Fig. 1) the indications are for rest and the institution of treatment designed to increase the local circulation. Acute lymphangitis, acute spreading cellulitis, and acute streptococcal septicemia must be treated by the most efficient means we have at our command. These measures, which consist of absolute bed rest, massive hot wet packs, and the forced administration of large amounts of fluids, must be started as soon as the patient is seen, and maintained until all evidence of extension has disappeared and localization has occurred. Incision must be withheld, often for as long as ten days to two weeks after the onset of the infection, until the advancing swelling recedes and a localized process can be definitely diagnosed. As Koch has said, "The patients who have survived . . . have been those who were treated by conservative measures, and in whom active surgical intervention was delayed until there was no question as to the presence of a definitely localized suppurative process."

While in spreading infections an incision

made too early may be followed by a rapid and dangerous extension of the infection, delay in making incision in the localized processes may also prove disastrous. In two conditions partic-

known by induration, swelling and localized tenderness, plus certain almost pathognomonic findings as described by Kanavel. In the case of felon, the localized tense, throbbing, moderate

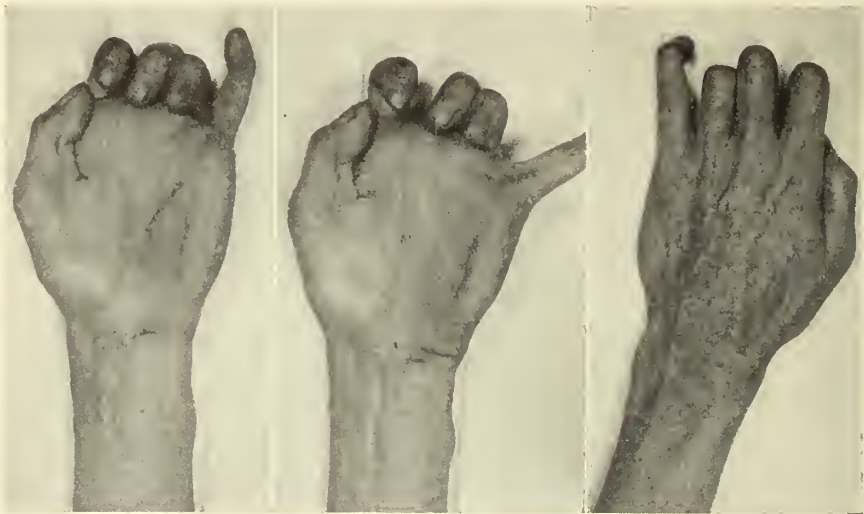


Fig. 4. Result of neglected radial and ulnar bursa infection and division of median nerve in incision for drainage, and extensive sloughing of tendons.



Fig. 5. Result of midline incision for suppurative tenosynovitis.

ularly is an early incision indicated: namely, in felon and tenosynovitis; and in these two infections decision is frequently difficult. This is probably because suppuration is too closely associated in our minds with fluctuation. It must be remembered that fluctuation rarely occurs on the hand, and that, with the exception perhaps of some of the subcutaneous infections, all other localized abscesses on the hand make themselves

swelling of the finger tip, plus a history of pain which has kept the patient awake over night should be sufficient to warrant the diagnosis. Delay in opening the felon (Fig. 2) to secure drainage and release tension leads to osteomyelitis of the distal phalanx and prolonged healing. Suppurative tenosynovitis is recognized by four cardinal symptoms of uniform swelling, flexion of the finger, localized tenderness over the course of the sheath, and pain on extension of the finger. Given these symptoms and findings, incision should not be delayed; otherwise the likelihood of tendon necrosis is very great and extension of the infection into the large fascial spaces in the palm or into the retroflexor space of the forearm is almost certain to occur. Delay in drainage of the large fascial spaces in the palm or forearm favors extensive involvement of the tendons and soft tissues about them and to a concurrent increase in the toxemia. The sloughing of tendon, the osteomyelitis and suppurative arthritis, the prolonged course characterized by persistent sinuses, and the intermittent discharge of necrosed tendon and bone which follow delayed drainage, leave a miserable scarred and contracted hand which almost defies attempts at functional repair (Fig. 3).

Incisions on the hand are based upon the same

inciples as those which govern incisions elsewhere. They must not divide important structures; they should not lie in the midline, or cross flexion creases transversely; they should



Fig. 6. Inadequate and incorrectly placed incision for drainage of middle palmar space.

ord adequate drainage; they should not pass through uninvolved tissue spaces which consequently become infected; and they should not lead to functional disturbances after they have healed. It is essential that the surgeon have an intimate knowledge of the anatomy of the hand, and that the incision be made in a bloodless field, with the care of an anatomic dissection. The patient should be given a general anesthetic, and the field of operation kept dry by means of a blood pressure cuff applied to the arm and pumped up to 240 or 250 mm. Hg. Nerves and blood vessels known to lie in the course of the incision are isolated and identified as the first step of the procedure. In this way the limits of the abscess can be exactly determined, its boundaries and possible extension recognized, and the important structures which lie in relation to it can be visualized and protected. Only by careful anatomic incision can be avoided division of digital nerves and vessels when incising a suppurative tenosynovitis; division of median (Fig. 4) or ulnar nerves when opening up the radial bursa in the palm; and division of the motor branch of the median nerve when draining the radial bursa in the thenar eminence.

The location of incisions on the fingers and hand has considerable functional importance. In general, it may be said that incisions on the hand should not lie in the midline and should not cross flexion creases transversely. Midline incisions on the fingers lead to serious disturbances,

both in the immediate postoperative course and after healing has occurred (Fig. 5). Following such an incision the tendons prolapse through the wound, where they are exposed to the air,

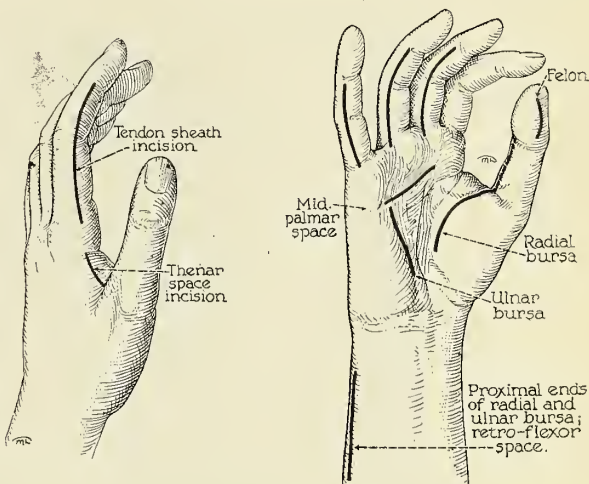


Fig. 7. Incision for drainage of tendon sheaths and fascial spaces of the hand.

drying, and trauma, and are very prone to become necrotic. The tendon bed may become filled with granulation tissue into which the tendon cannot be returned, and an irremediable situation obtains. If healing does take place with the tendon in its bed, the contracting scar on the volar surface draws the finger into flexion and this deformity is increased by the tendon itself, which bonestrings forward, since it is deprived of its transverse fibrous ligaments. To remedy this situation, at least two extensive, doubtfully successful, plastic procedures are required.

The midline incision for felon (Fig. 2) does not divide the perpendicular connective tissue fibers which attach the skin to the periosteum, the division of which is the essential feature of the operation. The fish-mouth incision in felon, which is so frequently illustrated in the surgical texts, while it provides efficient drainage, is followed by a deep furrowed scar which seriously interferes with the use of the finger tip for the performance of fine acts. It is an especially disabling scar in a surgeon. The fish-mouth incision is not necessary, since the more conservative lateral hockey-stick type (Fig. 7) equally fulfills the purpose and is not followed by disabling scars.

The incision must not only be correctly placed, but it must also be sufficiently large to provide

drainage. An inadequate incision of an infected area (Fig. 6) leads to persistence or extension of infection, sloughing of tissues, and sinus formation. A small incision on the volar surface of

the tendon sheaths of the index, middle and ring fingers may be secured by two incisions (Fig. —one well to the lateral side extending from the distal to the proximal flexion crease, the other



Fig. 8. (Patient of Dr. Sumner L. Koch.) Suppurative tenosynovitis of radial and ulnar bursæ following knife cut on distal phalanx of right thumb. Swelling and pain developed several days after injury. Treated elsewhere for rheumatism for several days. Drainage of both bursæ about eight days after injury.

(a, b, c). Hand just previous to incision.

(d, e, f, g). Functional result obtained by proper incision. Photograph taken five months after operation.

Suppurative tenosynovitis of radial and ulnar bursæ following knife cut on distal phalanx of right thumb. Swelling and pain developed several days after injury. Treated elsewhere for rheumatism for several days. Drainage of both bursæ about eight days after injury. Pure culture of non-hemolytic streptococcus.

proper incision. Photograph taken five months

a finger will not drain the tendon sheath, nor will an incision into the retroflexor space of the forearm drain the distal end of the radial bursa. An incision which does not reach the proximal cul-de-sac of the tendon sheath, or the proximal ends of the radial and ulnar bursæ, will not adequately drain the sheaths, and tendon slough and extension of the infection into fascial spaces will occur. In case of the sheaths of the index, middle and ring fingers, the lumbrical canals and deep fascial spaces of the palm, the middle palmar space and thenar space, are certain to be involved. In case of the radial and ulnar bursæ, the infection, after rupture from the proximal end of the sheath, extends into the retroflexor space above the wrist and upwards between the muscle groups of the forearm about the ulnar nerve and artery toward the elbow. Drainage of

provide drainage for the cul-de-sac, along the distal transverse palmar flexion crease. The ulnar bursa requires three incisions (Figs. 7 and 8) for adequate drainage—a digital incision, a palmar incision along the radial border of the hypothenar eminence, and an incision on the ulnar side of the forearm to secure drainage of the proximal cul-de-sac. The radial bursa (Figs. 7 and 9) is drained by an incision along the ulnar side of the thumb and thenar eminence and a second incision above the wrist, which reaches the retroflexor space.

Incisions which cross flexion creases transversely are best avoided, if at all possible. Drainage of subcutaneous abscesses on either the volar or dorsal surfaces of the finger should be secured through a transverse or an L-shaped incision, which gives good access and heals with

nimum of scar. Similarly, incision for drainage of the middle palmar space should follow the line of the distal transverse flexion crease of the palm. Such an incision, passing as it does at

must pass to the ulnar side of the thumb and thenar eminence, and must not traverse the substance of the intrinsic muscles. Such an incision affords poor drainage and leaves serious scar

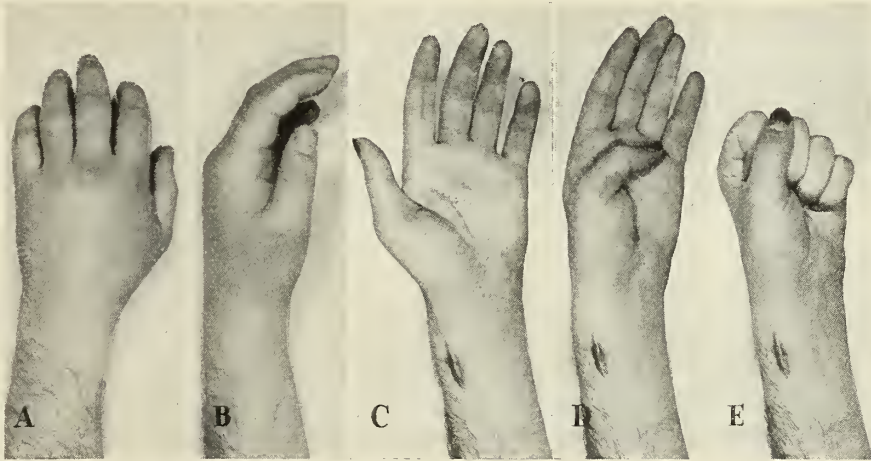


Fig. 9. Suppurative tenosynovitis of radial bursa.

(a, b). Marked swelling of hand previous to incision. Although the swelling is most marked on the dorsum, the pus is located in the sheath on the volar surface. Radial bursa was opened in the thumb and above the wrist. The ulnar bursa was explored in the palm but found normal. Pure culture of staphylococcus aureus.

(c, d, e). Function of hand eight weeks after drainage.

right angles to the nerves, blood vessels and tendons, must, of course, be made with the greatest care, in a bloodless field, under complete anesthesia. A similar transverse incision should be made for the proximal cul-de-sac of the sheaths, and for lumbrical space and collar-button abscesses. Incisions for tenosynovitis on the finger must be made well to the lateral side beyond the ends of the transverse digital creases. With the finger markedly swollen and tense, as it is in tenosynovitis, the incision which at first appears to be well lateral may, upon healing, be found to be almost in the midline. ✕

An incision which carries infectious material from involved to non-involved spaces may easily convert a minor infection into a serious major one or may further complicate a major infection. The incision for felon, if carried too far proximalward, may enter the tendon sheath and lead to a suppurative tenosynovitis, or it may enter the distal interphalangeal joint and cause suppurative arthritis. Incisions for subcutaneous abscesses of the fingers, unless performed in a bloodless field and made step by step with the care of an anatomic dissection, may be carried into the tendon sheath, again converting a minor process into a major one. The incision for drainage of the radial bursa in the palm

contractures as well as functional disability. ✕

The use of a local anesthetic may lead to serious complications and should be avoided if possible. A general anesthetic is indicated not only because the proper incision can seldom be performed under a local anesthetic, but also because of the dangers of local anesthesia in infections of the hand. The local anesthetic is dangerous for two reasons: first because it traumatizes tissues, and second because it may lead to extension of infection. The injection of novocain into or about an inflamed area is very painful to the patient, interferes with the protective walling-off process, and may be followed by rapid extension of the infection. Local infiltration is especially dangerous in the diffuse spreading infection. Curiously enough, many of our physician patients with acute spreading infections of the hand have had too early incision under a local infiltration anesthesia. Injection of the anesthetic agent at some distance from the area of infection, e.g., at the base of a finger for incision of a felon or paronychia, I believe is also unwise. We can never be sure that the tissues at the base of the finger are free of infection, nor can we be certain that we do not carry bacteria into them from the surface. The injection of novocain about the nerves and blood ves-

sels at the base of a finger may be followed by gangrene of the digit, a complication not frequently seen, but sufficiently serious to contraindicate the procedure. The ethyl chloride spray

leaving in of drains for days at a time leads considerable disturbance in healing. The drain acts as a foreign body and drainage will persist as long as it is present. It promotes drainage



Fig. 10. Osteomyelitis and suppurative arthritis resulting from daily insertion of drains into a small wound of the thumb.
(a, b). Roentgenogram immediately after injury.
(c, d). Roentgenogram three weeks after injury.
(e, f). Roentgenogram three weeks after removal of drain and adequate soft tissue drainage.

has several serious contra-indications. It is unsatisfactory to the patient because it does not anesthetize, and to the surgeon because it does not allow the careful incision so essential to drainage. A more important contra-indication to the use of the ethyl chloride spray is the lowering of the local tissue resistance which follows freezing.

There is considerable disagreement among surgeons as to the use of drains. Much of the uncertainty which exists as to the indications for the use of drains, types of drainage material to be used, and length of time drains should be left in place probably arises from the fact that the pieces of gauze, rubber or glass which are led into abscess cavities have been called drains. Since they have been called drains the assumption is that they promote or provide drainage and otherwise favor the emptying of abscess cavities. It might be better if a new word were coined for these materials, one which would connote more accurately the purposes for which they are used, and not by implication stimulate their incorrect use. Drainage is secured by adequate incision and not by leading strips of gauze, rubber, or rigid tubing to the site of infection. The vaseline gauze or rubber dam put into the incision immediately after it is made helps to control oozing and keeps the edges of the wound apart for twenty-four or forty-eight hours. It serves no useful purpose in the wound after this period, but should be removed from the incision and should not be reinserted. The daily re-insertion of drains (Fig. 10), or the

to be sure, in the same way that a foreign body such a spicule of dead bone, or a necrotic tendon or a bit of suture material promotes drainage until it is removed. The persistent use of a drain also favors secondary infection and continuous reinfection of the wound.

The through-and-through drain (Fig. 3) is a good example of a catchword which is too frequently accepted without critical thought. It has no place in the surgery of the hand. It passes ruthlessly through healthy tissues, leading to extension of infection, and, since it is most often used in the wrist and palm, is frequently followed by osteomyelitis of the metacarpus or carpus. Used on the fingers for drainage of tendon sheaths, it causes necrosis and sloughing of the tendon and infection of the bones and joints.

The use of hard rubber or glass drains even for short periods of time, but especially if they are left in place for many days or are repeatedly inserted, is a dangerous practice, since they lead to pressure necrosis of important structures and lower the local resistance of the tissues to infection.

The value of rest in tissue healing has been repeatedly emphasized. We have come, however, to associate the use of splinting and immobilization with fractures or corrective procedures. Rest, splinting (Fig. 11), and proper immobilization are needed in any condition in which the tissues are struggling with injury or infection. Rest is as much indicated during the acute stage of an infection as it is after tendon repair.

one had to choose but one therapeutic agent from among the many at our disposal, that agent would be rest. An acute infection will often subside under rest alone, while in the chronic infections rest is one of our greatest aids. In the acute spreading infections, rest is the essential part of the treatment; in other conditions it is an invaluable aid which must never be forgotten. How rarely, however, do we see a hand splinted after incision of a middle palmar abscess, or a tenosynovitis; how rarely during the acute stage of a lymphangitis, and how much more rarely in the minor infections. Although in most instances healing will take place without splinting and rest, that is no argument against it.

Traumatization of areas of infection lowers tissue resistance, favors extension of infection and increases the period of healing. At the time of operation, incision should be made as atraumatically as possible; rough digital or instrumental exploration of the cavity and rough retraction of the wound edges should be avoided. Squeezing of the walls of the cavity to express pus, and the use of sponges roughly to wipe the drainage from an abscess traumatize tissues and break down the natural defensive reaction about the site of infection.

The addition of secondary infection is a real danger at all times. Too often a simple infection with a mildly virulent organism is converted into a serious mixed infection during dressings, or at operation. It is incorrect to argue that, because infection is already present, further contamination can do no harm. An infected area is susceptible to further infection and must be treated with the same aseptic precautions that we would accord clean wounds. Incisions for drainage should be made aseptically and the dressings changed with the same sterile technique that we use for clean wounds, with sterile instruments or sterile gloves, and the hands should not come in contact with the infected area, operative incision, or surrounding skin. The hot wet packs should be applied in such a manner that they need not be changed or from twenty-four to thirty-six hours, should be applied with aseptic precautions, and should require only the addition of warm solution every few hours. Such a pack can be applied by laying out the dressings on a sterile towel, placing the hand on them, and pinning the edges of the

towel together over the extremity. A dressing of this type is changed but once in twenty-four hours, and warm solution is added by pouring it between the edges of the towel. The older



Fig. 11. Splint to hold hand in position of function during active stage of infection. The splint can be boiled and incorporated in sterile dressings.

method of removing the gauze every few hours, boiling it up and applying it by hand, is not only inefficient and time-consuming, but disturbs the immobilization and multiplies many times the possibilities of secondary infection. Painting the area at each change of dressing with antiseptics, or the application of antiseptic salves, is both unnecessary and harmful: unnecessary in that the antiseptics serve no useful purpose; harmful in that the antiseptic injures delicate tissues and may even prolong the infection rather than shorten it. Too often the antiseptic is used to assuage our consciences for ignoring asepsis. The salves applied are frequently not sterile, block drainage, and interfere with the proper cleansing of the wound.

It is often surprising how quickly an infection which has persisted for weeks will subside with simple aseptic care, gentleness in changing dressings, and ordinary cleanliness. When an infection does not subside we must first eliminate the factor of continuous secondary contamination before other causes can be blamed. That many infections subside even when asepsis is ignored, speaks for the natural resistive powers of the tissues and not in favor of careless dressings.

Much harm may be done by radical attacks on areas of osteomyelitis of the bones of the

hand. The clue to the treatment, as pointed out by Koch, lies in the fact that osteomyelitis of the hand is secondary to soft tissue infection or injury; the bone forms part of the wall of the abscess. The soft tissues over the area of osteomyelitis must be drained, but the bone itself left alone. It is an error to scrape, curette or chisel into the infected bone; such practice only carries infection deeper into non-involved bone and leads to extension of the process rather than to its subsidence. The natural tissue processes will separate the necrotic from the living bone more efficiently and safely than can the surgeon. Neither the surgeon's eye nor the x-ray can differentiate between normal and infected bone. It is often surprising how bones and joints, which the roentgenologist reports to be badly infected and necrotic, gradually clear up under conservative management. It is alarming to watch the rapid progression of infection through a finger in which every suspected area of osteomyelitis is attacked with chisel and curette, often on the barest of evidence. In the presence of osteomyelitis the surgeon should secure adequate drainage of the soft tissues (Fig. 10); necrotic bone, if separated, may be gently lifted out, but under no circumstances should the bone be attacked with the idea of removing infected areas.

Elevation of the extremity during the acute stage is undoubtedly of value. When the patient is in bed the hand should be placed on pillows at about the level of the heart. This improves the circulation, discourages the development of edema, and is a more comfortable position than dependency. After the patient is up and about it is sometimes advantageous to keep the hand in a sling for a week or so, to favor local circulation, discourage edema and insure restricted use.

During the acute stage of the infection, fluids should be administered in amounts sufficient to maintain a good urinary output, because of the increased loss due to toxemia. In the minor infections without much toxemia, this may not be so important; in the major infections, however, especially in the acute spreading processes, the toxic absorption may almost overwhelm the patient and here fluids are of vital importance. Just how much should be given to a patient, and how these fluids act when administered in amounts beyond those necessary for the ordinary requirements of perspiration, pulmonary

evaporation and urinary secretion, are questions which are still unsettled. The work of Collier and his associates, of Michigan, is doing a great deal to clear up this situation. It is our practice to administer a minimum of 4,000 c.c. of water a day, preferably by mouth or rectum, and, only under exceptional circumstances, subcutaneously or intravenously. It is sometimes surprising to watch the urine clear of casts and albumen, and the toxic symptoms subside when fluids have been properly given. It is not enough merely to order the pushing of fluids—the amount must be specified and an accurate record kept of the intake and output, otherwise the patient is sure to get less than the desired amount.

The maintenance or restoration of function of the hand is the third essential to successful management of an infection. While an understanding of the anatomy is essential to the intelligent management of infections, equally as important is an appreciation of the motor and sensory functions of the hand. The surgeon must constantly remind himself that his goal is the restoration of function and that function must not be sacrificed in efforts to bring an infection under control. The position in which the hand is kept, the incisions which are made, the length of time absolute immobilization is maintained, must be dominated by this conception. No amount of surgical skill can restore the functional loss which may follow a single thoughtless or delayed incision. Months of patient work, tension splinting, and physical therapy may be required to undo the contractures and deformities which may follow if the hand is allowed to assume a vicious position during a prolonged infection. ✕

The difficulties of functional maintenance and restoration are due to the tremendous functional capacity and complexity of the hand. The hand is an important motor and sensory organ, and the slightest motor disability or sensory loss may occasion considerable functional disturbance. Despite the complexity of the motor acts of the hand, however, it is possible to reduce all of them to combinations of rather simple motions. Without going into these motions in detail, suffice it to say that they are flexion, extension, abduction and adduction of the fingers, thumb, and wrist; rotation of the thumb, and supination and pronation of the forearm. An appreciation of these simple components of the complicated

movements is of considerable help in the functional care of the infected hand. ✕

Besides being our most important motor organ, the hand is our most important peripheral sense organ; a large share of our knowledge of the outside world comes to us through our hands. Preservation of this sensation in its entirety is of the greatest importance.

Neglect to keep the hand in the position of function may not be of very serious import in the minor and rather brief infections; however, in the major infections the position of function must be strictly maintained from the start, and the hand must not be permitted to assume vicious positions in which any function is almost impossible, and from which functional recovery is very difficult. The positions which the unsupported hand assumes (Figs. 3 and 4) are either the flat pancake hand, which follows splinting on a flat board, or the claw hand, resembling not a little the hand of ulnar paralysis, with hyperextension of the metacarpophalangeal joints, flexion of the interphalangeal joints, and often flexion of the wrist. If the hand is going to be stiff, it is imperative that it be in a position in which, with a minimum of motion, the maximum of use is obtained. The position of function (Fig. 11) so stressed by Kanavel is the position of grasping, and is not the position of rest described by the anatomists. Starting with the hand in the position of function, the physical therapist can accomplish a great deal and reparative procedures are more easily accomplished.

Failure to start active motion sufficiently early after the acute process has subsided may be accountable for considerable disability. As soon as drainage has been secured and the infection is subsiding, those fingers not directly affected should be actively or passively moved each day.

This motion must not be overdone; once a day at the first is sufficient. It is only necessary that each joint not directly involved be put through its full motion once every twenty-four hours for it to maintain its mobility. In the neglected hand infection, it may be necessary to move the joints passively, and when this is done one can often hear the fibrinous adhesions about the joints crack as they suddenly give way. This motion must be done cautiously, of course, and must not be done in the presence of acute infection. It is possibly better to err on the side of conservatism and allow the hand to remain immobile too long than to start motion too early; however, when but one finger is involved and the process is subsiding well without complications, there is no excuse for allowing the remaining fingers to become ankylosed.

The use of post-infection and postoperative traction splinting, and of physical therapy, is indicated mainly in instances in which a severely crippling infection has left the hand very stiff, or in which early motion has been neglected. Here tension splinting and correctly administered physical therapy may restore function which would otherwise be lost. This restoration of function in a hand contracted by fibrous adhesions, tendon shortening and indurated scars must of necessity be a slow, gradual and laborious process. It can seldom be hastened by the forceful extension of joints, since such practices often lead to tearing rather than stretching, and the subsequent scar formation rapidly re-establishes the original contracture, often worse than it was before. The tension splinting should slowly stretch and not forcefully tear adhesions and contracted tendons. The physical therapist must depend upon the simple measures of heat, motion and massage, not upon fancy and impressive gadgets.

CLINICAL SYNDROMES RESULTING FROM THE OVERFUNCTION AND THE UNDERFUNCTION OF SOME OF THE ENDOCRINE GLANDS*

EDWARD H. RYNEARSON, M.D.

Rochester, Minnesota

I AM well aware of the futility of attempting a detailed discussion of such an enormous subject. Perhaps it is foolhardy to attempt even a brief résumé of this field but the attempt is being made with the hope that this paper may interest some who have become confused in trying to read the voluminous literature. Few direct references will be made to this literature for to do so would defeat the purpose of this paper. Neither will there be a discussion of all of the endocrine glands. This paper, then, will consider briefly those syndromes resulting from the overfunction or underfunction of certain of the endocrine glands.

The Pituitary Body

The pituitary body is composed of at least three parts: the anterior, the posterior, and the intermediate lobes. The posterior lobe is considered first because it is the best understood. There are at least two hormones of the posterior lobe: One, pitocin, has an oxytocic action and is responsible for the contraction of the uterus. The other, pitressin, a pressor fraction, affects the cardiovascular, renal, respiratory, and intestinal systems. It is the pressor fraction which renders solution of posterior pituitary effective in the treatment of diabetes insipidus, a condition in which the pressor fraction seemingly is absent. This statement may be debatable since the pathologic basis for the occurrence of diabetes insipidus is poorly understood. However, there can be no doubt that in most cases of diabetes insipidus the patients respond promptly to the administration of the pressor fraction. Following this discovery it was learned that in many cases diabetes insipidus can be controlled without the necessity of administering the solution of posterior pituitary by hypodermic injections but by insufflating small amounts of powdered posterior pituitary. Small amounts are snuffed or blown into the nares; the patient learns by experience the optimal amount of the powder

and the necessary frequency of administration. In most cases the condition is well controlled by two insufflations a day. There are some cases of diabetes insipidus in which the condition can be controlled by the oral administration of aminopyrine; one tablet, which contains 5 grain (0.3 gm.) of the drug, should be taken two or three times daily. Finally, it should be added that not every patient who drinks large amount of water and passes large amounts of urine has diabetes insipidus. This condition is very frequent among nervous or psychoneurotic individuals. The diagnosis can be made very easily by having the patient collect a specimen of urine in the morning, after he has not drunk any fluid since dinner the previous evening. If diabetes insipidus is present the specific gravity of the urine will be low, probably below 1.006, since patients who have this disease have lost the ability to concentrate urine. If the specific gravity is more than 1.010, the patient is not suffering from diabetes insipidus. The patient obviously must not know the reason for this collection of urine since a dishonest patient could easily spoil the test.

It is difficult to discuss the anterior lobe of the pituitary body because its functions are complicated and little is definitely known about them. There are many known and suspected hormones: the two which are gonadotropic (one follicle-stimulating, the other luteinizing in character), the somatotropic (growth) hormone, the thyrotropic hormone, possibly a parathyroid hormone, the mammatropic (lactogenic) hormone, the interrenotropic hormone, and those hormones concerned with the metabolism of carbohydrate, protein, fat, and water. Much work has been done on these and other less well defined hormones and much of great importance to the broad field of medicine lies in their elucidation. With the exception of the gonadotropic hormones, none of these hormones is suitable for routine administration to patients. The clinical reports of the use of the gonadotropic hormones are confusing.

*From the Division of Medicine, The Mayo Clinic, Rochester, Minnesota. Read before the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 3, 1937.

From a purely clinical point of view physicians may be interested in at least four well defined conditions. One is Frölich's syndrome, which is due to a deficiency of the secretion of the anterior lobe of the pituitary body, secondary to a tumor of the chromophobe cells. Replacement therapy has been tried in this condition but the results have not been conclusive. The second condition is acromegaly, which is caused by a tumor of the eosinophilic cells of the anterior lobe of the pituitary body. It is too early to say whether the administration of an estrogenic product will help this condition. Surgical removal of the offending gland is advocated only when the patient's vision is affected. The third condition, which was originally described by Cushing, is the result of a tumor or hyperplasia of the basophilic cells of the anterior lobe of the pituitary body. This condition produces hirsutism, abnormal deposits of fat, hypertension, glycosuria, hyperglycemia, an elevation of the basal metabolic rate, purplish striae of the skin, osteoporosis of the bones, amenorrhea, and other changes. This syndrome is also produced by tumors of the suprarenal cortex and by certain ovarian tumors (granulosa cell tumors). Patients who have had pituitary basophilism (Cushing's syndrome) have improved following the application of roentgen therapy to the region of the pituitary body.

Finally, there is the syndrome described by Simmonds, that is, pituitary cachexia, in which there are evidences of the lack of all pituitary hormones. This condition is so rare that little is known about it. There are only a few cases in the literature which could be termed proved cases; the great majority of cases listed as Simmonds' disease are so designated on incomplete evidence. For example, many of the patients were suffering from anorexia nervosa. In some cases improvement has been noted following treatment with glandular products.

The intermediate lobe of the pituitary body is least understood. It has important neural connections and there are those who believe it secretes hormones which are credited to the anterior and posterior lobes. Most investigators agree that it is solely responsible for one hormone, the chromatophoric hormone, which affects the skin. Its effect is determined by injection into a minnow (*Phoxinus laevis*) and by observing the red color at the point of attach-

ment of the fin. This hormone also has been reported to have an antidiuretic effect.

The Suprarenal Glands

A discussion of these important small glands must be divided into separate considerations of their anatomic divisions, the cortex and the medulla. The suprarenal cortex has received merited attention since the classic description by Addison of the syndrome which follows its destruction. Addison's disease is sufficiently well known that I shall not describe its symptoms. Only a few years ago it rightfully carried a fatal prognosis but in recent years our knowledge has increased until many patients who have Addison's disease are able to lead useful lives. This does not mean that many patients do not die from its effect or that the treatment is comparable to the success attending the treatment of diabetes but rather that encouraging advances have been made. A few years ago efforts were made to treat this condition with epinephrine, a method which was wrong in theory. The results were poor because the patient did not suffer from a lack of epinephrine but from a lack of cortical extract. Advancement in our knowledge came from two sources: the separation of the active principle of the suprarenal cortex and the discovery of the importance of maintaining a proper balance of the blood electrolytes. There has been a more recent development which involves the electrolyte balance. It has been learned that potassium is a "poison" to patients who are suffering from Addison's disease. Thus, the treatment of Addison's disease consists, first, in feeding the patient a diet low in potassium; second, in prescribing the addition of at least 10 gm. of salt and 5 gm. of sodium citrate or sodium bicarbonate daily; and, third, in administering cortical extract subcutaneously or intravenously when it is necessary. It is encouraging to know that many patients do not require the administration of this expensive extract except during an acute crisis. When a patient is suffering from an acute crisis of Addison's disease the value for the serum potassium increases, that for the serum sodium decreases, the blood urea increases, and the values for the chlorides and carbon dioxide combining power of the plasma decrease. These and other chemical changes return to normal when adequate amounts of sodium chloride and sodium citrate

or sodium bicarbonate are injected intravenously together with 50 or 100 c.c. of potent cortical extract.

An entirely different clinical syndrome is produced by a tumor of the suprarenal cortex. This syndrome is identical with the symptoms previously described as pituitary basophilism (Cushing's syndrome), which will not be repeated here. An impressive number of cures have been reported to follow the surgical excision of these tumors.

A discussion of the suprarenal medulla is difficult because there is no known clinical syndrome which is recognized as being caused by a lack of suprarenal medulla, and cases in which a tumor occurs in this portion of the gland are very rare. When such tumors do occur they produce a condition called "paroxysmal hypertension," in which the patient has sudden episodes of vasomotor symptoms associated with rapid and extreme rises in the blood pressure due to the sudden expulsion of large amounts of epinephrine. The patient is normal between these attacks. Cure follows the removal of the tumor.

The Thyroid Gland

Our knowledge of this gland has been so thoroughly disseminated that a few academic remarks would serve no useful purpose. The signs and symptoms of hyperthyroidism are too well known to bear repeating. While I am not a surgeon, I would like to make one remark. "The medical treatment of hyperthyroidism," which is so often referred to, should rarely be attempted. If hyperthyroidism is present the patient should be prepared for operation by the preoperative administration of compound solution of iodine (Lugol's solution) and thyroidec-tomy should be performed. This program has produced excellent results with a mortality of less than 1 per cent. The deaths which occur at present are usually in cases in which the hyperthyroidism has been unrecognized until too late or in cases in which the hyperthyroidism has been allowed to progress for long periods while "medical treatment" was employed. This statement is worded strongly for the purpose of emphasis and doubtless should receive qualification. I will go further, however, and say that I believe every adenomatous goiter should be removed, even a "benign" one which is not pro-

ducing hyperfunction. Carcinoma of the thyroid gland practically always occurs in an adenoma and never in the hyperplastic gland which is typical of exophthalmic goiter. It is most distressing to find an inoperable carcinoma of the thyroid gland in a mother of three growing children and to learn that she had been advised several years before to "let that goiter alone if it's not bothering you so don't bother it." The place for the medical treatment of goiters is principally in the prevention and treatment of the simple colloid goiters of adolescence, in the proper diagnosis, and in the preoperative and postoperative care of patients suffering from hyperthyroidism. At least a third of all "benign" adenomas produce hyperfunction sooner or later and often cause severe damage before the hyperfunction is recognized. How much better it would be if all adenomas could be removed while they are still "benign"!

Hypothyroidism is caused by a deficiency of thyroid secretion. In its more severe form it produces the characteristic picture of myxedema. Patients who are suffering from myxedema present the typical changes in facies and bodily contour and a dry pale or waxy skin; the hair is dry and diminishing, the speech is slow, the memory is defective, lassitude and intolerance to cold are present, the reflexes are slowed, and other symptoms may be present. The basal metabolic rate is very low; it sometimes is between -30 and -40 per cent. Such patients respond uniformly well when they receive adequate amounts of thyroid extract. The average patient may safely receive 4 grains (0.24 gm.) of desiccated thyroid daily for several days. The physician should then determine the optimal amount required to keep the patient's metabolic rate between -10 and 0 . From 1 to 2 grain (0.065 to 0.12 gm.) of desiccated thyroid is the usual amount required. There are numberless patients who have low basal metabolic rates without myxedema. These patients often do not respond even when large amounts of thyroid extract are prescribed and probably do not have true deficiency of the secretion of the thyroid gland. In other words, I believe that the low basal metabolic rate found in such cases is part of the clinical picture, rather than a cause of it. Berkman recently has reviewed our knowledge of this entire field.

The Parathyroid Gland

These small glands, which lie behind the thyroid gland, play a most important rôle in the metabolism of calcium. Syndromes result both from the hypofunction and hyperfunction of these glands.

Cases of spontaneous hypofunction are extremely rare. In most cases this condition follows the accidental injury to or removal of the parathyroid glands in the course of resection of the thyroid gland. If the parathyroid glands have suffered only temporary injury their function returns and the symptoms of hypoparathyroidism are not permanent. These symptoms are those associated with a low value for the serum calcium and are manifested when this value falls below 8 mg. per 100 c.c. The earliest symptom is numbness, which usually is noticed as a prickling or tingling sensation of the lips and hands. Later, there are signs of muscular irritability and spasticity, Chvostek's and Trousseau's signs are positive, and carpopedal spasms may occur. One patient, a nun, had suffered from hypoparathyroidism for twenty-three years. She had undergone operations for the removal of bilateral cataracts which had developed as the result of the hypoparathyroidism. During all these years she had been troubled with muscle cramps and generalized convulsions finally developed. Her major complaint was an extremely loud stridor, a complaint which was shared by the other nuns. With each breath, day and night for twenty-three years, there had been this loud and alarming noise. Examination of the larynx disclosed a fixation of both vocal cords, which was secondary to the accidental section of both recurrent laryngeal nerves at the time of operation. Chvostek's and Trousseau's signs were positive, typical changes were present in the nails, and a diagnosis of hypoparathyroidism was made. The value for the calcium was found to be 5.0 mg. per 100 c.c. of serum. She was advised to take a level teaspoonful of powdered calcium lactate (approximately 2 gm.) dissolved in water eight times daily and two teaspoonfuls of cod liver oil (approximately 7 c.c.) three times daily. Within a few days all symptoms disappeared and have never returned. Parathyroid extract, which first was isolated by Dr. Adolph Hanson, Faribault, could have been used effectively, but it is almost never necessary to use it, as the cheaper method which has been

described is just as effective and there is not the potential danger of overdosage which exists when the extract is used. In the treatment of acute parathyroid insufficiency a teaspoonful (2 gm.) of calcium lactate should be administered *in solution* every half hour until the symptoms are controlled. The use of cod liver oil, as described previously, is of importance because of the value of vitamin D in calcium metabolism.

It should be added that hypocalcemia is caused by conditions other than hypoparathyroidism; it may follow the loss of free hydrochloric acid in prolonged vomiting, it may follow hysterical hyperventilation, or it may occur during pregnancy and lactation.

Hyperparathyroidism

This disease is also known as osteitis fibrosa cystica or von Recklinghausen's disease. It has as its basic cause the overproduction of the parathyroid hormone, which seriously disturbs the metabolism of calcium. Calcium is "pulled out" of the bones. This causes the cystic changes, which are typical of the disease, and produces a great increase in the amount of calcium in the serum. In hypoparathyroidism with tetany, the value for the serum calcium is usually less than 8 mg. per 100 c.c., that for the serum phosphorus is more than 5 mg. per 100 c.c., and that for the phosphates is less than 5 mg. per 100 c.c. of serum. In hyperparathyroidism the opposite findings are present, and the value for the calcium often is 15 mg. or more per 100 c.c. of serum. Because of the cystic changes, the bones are weakened and are often tender. As a result of the weakening the bones fracture easily and the vertebræ are compressed so that an afflicted individual may decrease several inches in height. Muscular atony is present—the antithesis of the muscular irritability which occurs in hypoparathyroidism. There is often loss of appetite, loss of weight, constipation, abdominal pain, hypochromic anemia and urinary symptoms. The urinary symptoms, such as polyuria, are caused by the increased excretion of calcium. The salts of calcium often are precipitated in the urine and urinary calculi are formed.

In the presence of such symptoms and findings, a tumor of the parathyroid glands should be suspected. Sometimes, a tumor can be palpated in such cases, but even if none can be felt, exploratory operation should be performed by a

competent surgeon; if a tumor is found and removed, the patient will be cured. Following the removal of such a tumor, a temporary compensatory reaction takes place and the value for the serum calcium drops to a level where tetany occurs. This requires the administration of calcium and vitamin D for a few days. Wilder and Howell have called attention to the fact that the largest percentage of tumors of the parathyroid glands occur in communities in which there is little sunlight and have suggested that the tumors may be an effort on the part of the patient to compensate for a diminished supply of vitamin D.

Unfortunately, the literature contains many diagnoses of hyperparathyroidism which are erroneous. In many cases of senile osteoporosis, hypertrophic arthritis, osteitis deformans and multiple myeloma the condition has been diagnosed erroneously as hyperparathyroidism. The diagnosis of hyperparathyroidism should be reserved for those cases in which there are the typical findings which previously have been mentioned.

The Pancreas

Recent study is casting doubt on the generally accepted fact that diabetes mellitus is always caused by a deficiency of insulin. It is being pointed out that carbohydrate metabolism is a very complicated procedure in which the pituitary body, pancreas, suprarenal glands, liver and muscle all have important rôles and that there are many places in this complicated mechanism where a disturbance might cause hyperglycemia with its attendant symptoms. However, for the purposes of treatment, one must continue to rely upon the hormone of the pancreas, insulin. In Minnesota, we are proud of the strides being made in the control of this disease. As a result of the help offered by the committee on diabetes in publishing "Diabetes, how to make it harmless," there has been an encouraging decrease in the mortality. He who will successfully treat diabetes must have a complete understanding of the dietary needs of the patient, must understand the use of insulin and must, above all, know how to care for the complications of the disease.

Spontaneous hypoglycemia is much more rare than diabetes. Just as there may be many causes of hyperglycemia there also are many causes of

hypoglycemia. The one originally described by Seale Harris is hyperinsulinism, in which an excessive amount of insulin is produced by a tumor of the islands of Langerhans. The symptoms of spontaneous hypoglycemia are those which are commonly seen in an insulin reaction and vary from the milder symptoms of weakness, apprehension and sweating to generalized convulsions and prolonged periods of unconsciousness. They occur some time after food is eaten, are made worse by physical exertion, and are promptly relieved by the ingestion of food, the administration of dextrose or the injection of epinephrine. Unfortunately not all patients afflicted with spontaneous hypoglycemia have hyperinsulinism. A patient who has such severe symptoms should undergo an abdominal exploration, as the removal of a tumor of the islet cells will cure him. Other patients may have spontaneous hypoglycemia from other causes such as severe disease of the liver, but these patients will not be helped by operation. In the present state of incomplete knowledge such patients are doomed to a life of frequent feedings for only by this means can the value for the blood sugar be sustained at a normal level. It should be added that many nervous individuals feel better by eating between meals and many of them do have a slight lowering of the blood sugar in the morning. However, they should not be included in the literature as suffering from "hyperinsulinism" as their hypoglycemia is relatively mild and is probably a part of their syndrome rather than the cause of it.

Another important form of hypoglycemia is that which occurs in the infants of diabetic mothers. One theory is that the fetal pancreas attempts to compensate for the mother's lack of insulin and produces sufficient insulin to aid in controlling the mother's diabetes. When separated from its diabetic environment, the child's pancreas continues to produce large amounts of insulin, which depress the value for the blood sugar to hypoglycemic levels, with the production of cyanosis, convulsions and sometime death. The treatment of such patients was suggested by Wilder and has been recorded by Randall and me. It consists of proper prenatal care, delivery usually by cesarean section, and the frequent administration of dextrose by mouth and intramuscularly.

The Sex Glands

There is no room in this cursory and general discussion for adequate mention of the sex glands. They require a separate discussion of an exhaustive type. Thousands of articles have been written on their endocrine relationships and it is still impossible to draw any conclusions. It may be said that great promise lies in the elucidation of recent discoveries and their useful clinical application. Dihydrotheelin already has proved its value in the treatment of certain symptoms of the menopause and in the treatment of gonorrheal vaginitis in children. Products of corpus luteum are of importance in certain cases of habitual abortion, dysmenorrhea of the "crampy" type, and in facilitating conception in certain cases. There continues to be great confusion in distinguishing between the results following the use of true gonadotropic hormones and those hormones obtained from urine. In spite of the results reported in such cases as those of undescended testes, it may be said that our knowledge in this field remains most incomplete. The same may be said of the hormones of the male sex glands, although remarkable gains have been made in the chemical analysis and synthesis of such products and some fascinating results have been reported following their clinical use.

Only those workers engaged in fundamental laboratory studies and only those clinicians with every facility for careful study should engage in this type of treatment. In too many instances questionable substances are being injected in unquestioning patients. Certainly clinicians should use only those products which have been released by well-established pharmaceutical and biological laboratories.

The most important clinical syndrome resulting from the overfunction of the sex glands is that produced by an arrhenoblastoma of the ovary, in which many of the symptoms described in the discussion of Cushing's syndrome (pituitary basophilism) are present. In other words, it is often difficult to distinguish between Cushing's syndrome, a tumor of the suprarenal cortex or an arrhenoblastoma of the ovary. If the last-named condition is present, the surgical removal of the tumor will cure the patient. The symptoms of overfunction of the male sex glands are not so definite but palpation of the tumor is diagnostic. The symptoms of underfunction of the sex glands are too well known to be recorded here.

Summary

The purpose of this discussion has been to demarcate the well-established clinical entities, arising from the overfunction or underfunction of the endocrine glands, from the heterogeneous maze of borderline abnormalities and physiologic and constitutional variants which are so frequently diagnosed as "polyglandular disease" and "endocrine imbalance." These ill-defined and poorly understood conditions may have as their basis a disturbance of the endocrine glands, but present evidence does not justify this conclusion. Progress of good medicine will be hastened if we frankly admit our limitations of knowledge.

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THE TREATMENT OF EMPYEMA*

THOMAS J. KINSELLA, M.D.

Minneapolis, Minnesota

EMPYEMA thoracis, pyothorax or suppurative pleuritis is a condition which has been recognized and variously treated almost from time immemorial. The Hippocratic school in the fourth century B.C. apparently recognized pyothorax and pyopneumothorax with its accompanying "Hippocratic succussion splash" and instituted drainage, even recommending the injection of air into the pleural cavity to facilitate drainage.¹²

Paul of Aegina⁴ (625 to 690 A.D.) mentioned paracentesis but apparently stopped short of opening the chest for empyema. Lanfranchi⁵ of Milan in his *Chirurgia Magna* published in 1296 mentions operations for empyema. Andreas Vesalius⁶ in 1562 successfully operated upon Carlos of Aragon for empyema and later reported two other successful operations. Purmann⁷ in 1692 advised incision of the chest for this condition. The ancient Japanese, and likewise the Indians of the Great Lake region, are said to have incised for the drainage of purulent accumulations in the chest and yet in 1835 Dupuytren,¹⁴ the famous French surgeon, allowed himself to die of empyema rather than submit to operation, stating, "that he would rather die at the hands of God than at the hands of the surgeon." Thus we see that in the treatment of this condition, as in many others in thoracic surgery, procedures have been used, forgotten, and re-discovered even repeatedly before reaching their present stage.

The past twenty-five years have added much to the literature and likewise considerable to our knowledge of this condition and its proper treatment. That much still remained to be learned was all too forcefully demonstrated by the appalling mortality among the empyema patients during the influenza epidemic of the World War period where the streptococcic empyemas presented many problems not previously encountered in civil practice. The information obtained from this experience, particularly from the reports of the Empyema Commission and the

monograph of Evarts Graham,⁵ combined with a better understanding of the physiology of the chest, has done much to improve the handling of cases of thoracic suppuration. More recent a rather voluminous literature has appeared extolling the virtues of some particular method of treatment, frequently more or less complicated, greatly confusing the mind of the practitioner not intimately in touch with this particular field in spite of the conservative stabilizing influence of such men as Hedblom,¹⁰ Graham,⁶ Harrington⁷ and others of wide experience in thoracic surgery. This presentation is made not in an attempt to add anything new to this field but rather in the hope that a brief discussion from the standpoint of the mechanical and physiological principles involved may aid in clearing up certain moot points.

Causes of Empyema Thoracis

As empyema develops almost invariably as a secondary complication of some other process and as its proper treatment involves early recognition, a brief listing of the conditions which may lead to empyema is warranted. The following may be named, not necessarily in the order of their relative frequency or importance.

- Pneumococcic pneumonia
- Other types of pneumonia
- Infectious diseases
 - Influenza
 - Scarlet fever
 - Measles
 - Typhoid fever
 - Tonsillitis
- Bronchiectasis
- Pulmonary abscess
- Pulmonary infarct
- Pulmonary tuberculosis
- Pericarditis
- Diseases of the mediastinum
- Diseases of the liver
- Perforating wounds of the chest
- Diseases of the abdomen including subphrenic abscess
- Perinephritic abscess

Patients suffering from any of the above conditions, who present the suspicion of some complication, should be carefully watched for the possible development of empyema.

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Etiology

The organisms encountered in patients suffering from empyema vary rather widely from year to year and with the various epidemics which occur. They include pneumococci of all types, streptococci both hemolytic and non-hemolytic, staphylococci and occasionally a combination of several organisms. Patients who have bronchial fistulæ usually present more than one organism in various combinations of great complexity reaching a maximum in the putrid empyemas where myriads of putrefactive organisms overshadow the original offender. The tubercle bacillus must not be overlooked as the causative factor in any empyema, particularly one which in any way atypical or which does not respond readily to ordinary treatment. One should not forget that a Gram-positive bacillus may be the tubercle bacillus. When no organisms are found either on smear or culture, tuberculosis or malignancy should be suspected and an intensive search made until one of these or some other biological agent can be definitely determined. It is likewise well to remember that the tubercle bacillus may be easily overgrown by a secondary invader and the character of the process not suspected until it fails to respond to ordinary methods of treatment. A knowledge of the organisms causing the empyema is essential if we are to know what to expect from the process and how to avail ourselves of any possible specific measures against the particular organism. The use of specific pneumococcic serum against the proper types of pneumococci is of course to be highly recommended as early as possible in pneumonia and apparently reduces the incidence of complications. The use of the more recently introduced Sulfanilamide in patients presenting hemolytic streptococci may be well worth the effort. Certain dyes such as acriflavine or gentian violet may likewise prove of benefit in a staphylococcal infection. The importance of avoiding open drainage and the introduction of secondary infection in the presence of tuberculous empyema cannot be too strongly stressed.

Mortality

It has been thoroughly demonstrated on numerous occasions, particularly by the excellent published reports of Huer,¹¹ Graham,⁶ Brenehan² and others, that barring certain mechanical factors introduced into the picture by our

treatment, ill advised or otherwise, the mortality associated with empyema is usually not the result of the empyema itself, but of the association of various complications by the organisms which are producing the pleural abscess, and that a high mortality is frequently noted in association with streptococcal infections. We have likewise been shown that this mortality varies from year to year and in different epidemics. Failure to recognize these facts has led to many erroneous conclusions as to the relative importance or unimportance of various technical maneuvers and different types of treatment over short periods of time.

Principles of Treatment of Empyema

Certain fundamental principles underlying the proper treatment of empyema have been recognized for years and are here listed as they have been published elsewhere repeatedly:

1. Adequate drainage of the pleural abscess.
2. Avoidance of early open pneumothorax before the formation of adhesions or exudate has stiffened the mediastinum and fixed the lung to the chest wall, isolating a local abscess pocket.
3. Rapid sterilization and obliteration of the abscess cavity.
4. Maintenance of the proper nutrition of the patient.
5. Avoidance of chronic empyema.

If these principles are followed, the particular method employed becomes of secondary importance. It is well to remember that no case of empyema is cured until the pleural cavity is completely obliterated.

Types of Treatment

The various methods at present used in treating empyema may be listed as follows:

1. Aspiration.
Aspiration and irrigation through a needle.
2. Closed drainage.
Intercostal and transcostal.
Without irrigation and with irrigation.
Dakin's solution.
Dyes.
Fibrin solvents.
Other chemicals.
Irrigation and suction.
Tidal irrigation and suction.
3. Open drainage.

Such an array of methods may well leave the physician confused as to the proper one to select

for the individual patient. Fundamentally it is not the method but its proper utilization which is important. It must be freely admitted that in many individuals recovery might be brought about by the use of any or all methods if proper attention to details is given. When in doubt, however, the simplest method which will produce the results should be the one chosen. The more complicated and exacting types may prove perfectly adequate in a large well staffed hospital with a specially trained personnel but give very disappointing results in the hands of a busy practitioner who has numerous other demands upon his time.

Aspiration

Aspiration should be our first choice in the treatment of empyema for it possesses both diagnostic and therapeutic possibilities and its use enables us to obtain information which will help us to orient ourselves and to determine what method should be chosen for future use. As a diagnostic procedure, it enables us to determine: (1) the causative organism; (2) the character of the exudate and its change from time to time; (3) the limits of the empyema pocket. Clinically we must drain an empyema pocket where it is and not necessarily at some classical site. Therapeutically, aspiration may be of great value but it likewise has its limitations. Its usefulness has been summarized by one author as, "Always in infants, usually in children and frequently in adults." In the main, this is good advice if the limitations of the procedure are recognized. The best results from the use of aspiration alone are usually obtained in: (1) infants and children; (2) in early empyema; (3) in patients with low vital capacity; (4) in tuberculous empyema where external drainage is usually to be avoided; (5) for the gradual removal of large accumulations. It should be used as a preliminary to other types of treatment more frequently than as a single therapeutic measure.

Aspiration should be continued until the pus obtained is uniformly thick before undertaking open drainage. This in a pneumococcal empyema usually occurs in about a week, whereas in the streptococcal type two to three weeks or more may elapse. If the closed type of drainage is to be utilized, this waiting period is not so essential. Complete removal of all pus and fibrin

from the pleural cavity by aspiration alone is impossible and its continued use as a sole therapeutic measure, even in children, presupposes that the patient is able to sterilize and absorb or fibrose a certain amount of residual material. If the patient does not adequately care for this residual material, a recurrence as an acute or chronic empyema will result. This, if recognized and properly drained, may lead to perforation of the chest wall (empyema necroticans), or into a bronchus, or to fibrosis or late calcification of the residual exudate with limitation and deformity of the thoracic cage. For this reason, many men prefer external drainage at a late stage even in children as a supplement to the aspiration treatment.

Chest wall abscesses following aspiration occur all too frequently and are not altogether preventable, particularly where large needles are used for the removal of thick material. The incidence of such abscesses may be materially reduced, however, by flushing out the bore of the needle with a small amount of sterile saline prior to withdrawing it from the pleural space thus avoiding the deposit of pus and pathogenic organisms along the needle tract. Infection of the subcutaneous tissues in this manner following aspiration may lead to serious cellulitis and is not infrequently to spontaneous, although often inadequate, external drainage. The injection of small amounts of air into the pleural cavity may greatly facilitate aspiration by allowing the pus to settle to the bottom of the pocket about the needle but care should be taken to be certain that the point of the needle is in the pleural cavity before this is done. An obstructed needle should be cleared by the injection of saline rather than air if possible air embolism is to be prevented.

A large pneumothorax either intentional or accidental is to be avoided particularly in the patient with lowered vital capacity as it may embarrass the patient as much or even more than the purulent accumulation itself. Accidental pneumothorax, the result of injury to the lung by the needle, occurs not infrequently. Its incidence may be reduced materially by the use of short bevel needles rather than those with a very long bevel, by inserting the needle somewhat tangential to the surface of the lung and by avoiding too deep puncture. There is no necessity for inserting a three-inch needle to its full

length in probing for pus in the patient whose chest wall is only three-quarters of an inch thick.

One serious criticism of the use of aspiration in the treatment of empyema is that aspiration alone is often continued far beyond the time when it is accomplishing the results desired. If it is clinically evident that the patient is improving and the pocket is becoming smaller and the pus reduced in amount and lowered in bacterial count, then aspiration alone may well be continued. On the other hand, if it is found that favorable progress is not being made and the patient is in condition to permit either open or closed drainage, it is folly to continue aspiration longer. Single aspirations at long intervals do not adequately drain the pleural cavity, nor do they rapidly expand the lung or reduce the capacity of the pocket, therefore they do not fully meet the criteria previously listed for adequate treatment of empyema.

Closed Drainage

While closed drainage has been greatly publicized and much discussed since the 1918 influenza epidemic with its complicating streptococcic empyemas, it may be well to remember that this procedure is not a new one brought out to meet the unfamiliar conditions presented at that time but rather is an old one which had been more or less forgotten until its revival some twenty years ago. In 1876 Creswell Hewett, an Englishman, utilized closed drainage by inserting a tube into the empyema cavity through a cannula inserted between the ribs and connected his tube to a longer one which was allowed to curl up in a basin of potassium permanganate. A water sealed syphonage was obtained by placing the vessel at a lower level than the chest, while elevating the vessel permitted the permanganate solution to run into the pleural cavity and irrigate it. This same method, modified only as to detail, is in frequent use today under various names. Closed drainage, i.e. drainage in which free entrance and exit of atmospheric air is not permitted, may be instituted by either the intercostal or transcostal route and may be used either with or without irrigation. The insertion of an intercostal tube through a cannula inserted between the ribs is the simplest to install but its efficacy is somewhat limited by the fact that the size of the tube is necessarily restricted by the

width of the interspace available at the selected site, consequently the tube frequently becomes plugged by thick pus or fibrin. The size of the tube lumen may be increased somewhat by the use of an oval tube as suggested by Bettman, but even with this the lumen of the drainage tube is somewhat small and is secondarily reduced by outside pressure on the tube by the ribs. The use of Dakin's solution or some other fibrin solvent such as urea or pepsin may somewhat reduce but does not eliminate this difficulty. The resection of a small segment of rib not only allows removal of the fibrin masses, but it permits the insertion of a tube of much larger diameter and consequently affords better drainage and greater freedom from blockage, although it does afford less secure sealing of the opening for true closed drainage. Various methods of sealing have been advised which correct this disadvantage to a great degree. ✕

Closed drainage adapts itself to a considerable number of modifications of the details of drainage of the pleural abscess. These may be listed as: (1) aspiration only; (2) aspiration and irrigation; (3) syphonage; (4) the use of the Thiersch flapper valve; (5) irrigation and syphonage; (6) irrigation and controlled suction; (7) tidal irrigation; (8) tidal irrigation and controlled suction.

Removal of the pus alone through a tube with or without irrigation may accomplish everything that can be accomplished by simple aspiration and usually more efficiently if the tube is properly placed and the patient turned in such a position as to gravitate the pus over the opening of the tube. In some patients this is sufficient, the aspiration or irrigation being carried out at regular intervals with the tube clamped during the intervening periods. Syphonage, of course, is the method described by Hewett and may be accomplished by placing the end of the tube under water at a level below the patient's body and allowing the pus to run out by gravity or with respiratory movements, maintaining some negative pressure by the water seal. The use of the Thiersch flapper valve, in which a thin rubber finger cot slit transversely through the closed end is fastened to the end of the drainage tube, supplies a very simple and fool-proof method of obtaining a relatively closed drainage requiring little or no attention. The patient, either by cough or voluntary effort,

forces pus out through the slit tube. With the next inspiration, however, the thin walls of the finger cot immediately collapse, forming a check valve which prevents the entrance of air into the pleural cavity. As the patient is not connected up to any apparatus or series of tubes, he may be allowed much greater freedom of motion. For practical use, this valve has many advantages and is probably the simplest application of closed drainage.

Irrigation with various solutions, particularly with fresh Dakin's solution, has the added advantage of not only mechanically washing out the pus and affecting the organisms present, but in addition possesses the property of liquefying the purulent and fibrinous exudate. The use of controlled suction in combination with closed drainage and irrigation is accomplished either by means of the syphon system used by Wangensteen and others, or by the use of a filter pump attached to a water faucet with a break-over valve to avoid excessive negative pressure. Tidal irrigation,^{13,14,15} in which the irrigating solution flows back and forth through the tube in response to respiratory effort with or without the addition of controlled suction, provides about the last degree of complexity to the treatment of empyema. All complicated methods require much attention and careful watching if they are to perform their designed function. The best results with these methods will probably be obtained on the special empyema wards with trained personnel constantly on duty and alert to adjust or revise them as conditions warrant. The practitioner doing general work or treating the patient in a small hospital where help is limited will find these methods too complicated for practical use. When an automatic irrigating device is used, blockage of the drainage tube but not the intake tube may make it possible to overcollapse the lung and seriously embarrass the patient. Irrigations of any type are dangerous in the presence of a bronchial fistula. The sudden opening of a bronchus into the pleural cavity filled with Dakin's solution or other irrigating fluid may easily result in disaster. Patients have been drowned in this way.

The closed system remains closed only as long as the tissues maintain an airtight seal about the tube, which is usually a matter of a very few days only, even where the tubes are inserted by means of a trocar and cannula. Subsequently in

intercostal drainage and always in the transcostal type, some accessory method of sealing must be utilized, either by keeping the edges of the wound around the tube sealed with collodion rubber sponge with vaseline as used by Wangensteen¹⁵ and Carlson,³ or the use of foam rubber cemented to the tube and the skin by mastic or some other such substance. A constant watch must be kept to be certain that these areas remain sealed. Expansion of the lung with fixation to the chest wall is accomplished by retraction of the scar tissue progressing along the edges where the parietal and visceral pleura are in contact. While the use of negative pressure tends to expand the lung somewhat and on the average keeps it closer to the chest wall than when they are not used, periodic irrigations interrupt this and may even mechanically force the lung away from the chest wall. The use of negative pressure is not absolutely essential for the expansion of the lung although it may be an aid

Open Drainage

Open drainage of an empyema pocket by the resection of a portion of rib has been an accepted method of treatment for years and has apparently proved quite satisfactory. As the majority of the empyemas encountered prior to the epidemic of 1918, were pneumococcic in origin in which the effusion developed after the pneumonic stage of the disease had subsided and the patient had regained his respiratory reserve, as in this type the pus usually becomes thick within a week and fibrin forms rapidly, limiting the abscess pocket and fixing the mediastinum little difficulty was encountered with wide open drainage performed almost as soon as the empyema was diagnosed. During the influenza epidemic of 1918 and later, in which the complicating empyemas were streptococcic in origin appearing during the pneumonic process when the patient's vital capacity was still low and in which the pus frequently did not become uniformly thick for two to three weeks following the onset of the effusion and fixation of the lung and mediastinum developed rather late, it is only natural that complications and even fatalities were encountered where open drainage was performed early. The addition of an open pneumothorax to the load already borne by a pneumonia patient with an impaired vital capacity

would certainly do the patient no good and might well result fatally.

Open pneumothorax is always dangerous in the presence of an unattached lung and a flexible mediastinum. The normal individual with good vital capacity may for short periods of time tolerate a large chest wall opening without severe distress but even here embarrassment results if the time is too prolonged. As the vital capacity diminishes, this margin of safety is reduced in like proportion until a point may be reached in a patient suffering from pneumonia where no external opening whatsoever can be tolerated even for a short period of time without serious or fatal embarrassment. External drainage then has no place in the treatment of early empyema, in the presence of a flexible mediastinum or during the consolidation or diminished vital capacity stage of pneumonia. Should the surgeon inadvertently create an open drainage and then find that the mediastinum is flexible, creating a sucking chest wound, he should at once reduce the size of the opening or seal it adequately, converting it into a closed type of drainage.

Empyema pockets with bronchial communication should be thoroughly drained at once and great care taken to prevent any accumulation of pus about the bronchial opening, lest material be aspirated into the lung and a secondary inflammatory process result. Putrid empyema cavities should have wide open drainage as soon as possible. The foul odor is the result of decomposition of devitalized tissue or fibrin by secondary organisms, usually anaërobic, and frequently indicates bronchial communication past or present. Adequate drainage, removal of fibrin mass or dead tissue and elimination of anaërobic conditions will bring about prompt disappearance of the foul odor.

Open drainage and packing is an excellent method of rapidly cleaning up a localized empyema pocket but seems unnecessarily drastic on larger cavities.

When the mediastinum is fixed or the lung adherent to the chest wall, open drainage may be done at any time, but as the operation is not an emergency procedure, discretion should be used in selecting the most favorable time. Local pockets may be drained adequately at any time. From the surgical standpoint, open drainage properly placed in relation to the dependent portion of the empyema pocket provides the most

complete drainage possible. It is a simple method, requiring the least attention postoperatively, and at the time it is performed permits removal of large fibrin masses and the breaking down of accessory pockets to convert the abscess into a single cavity. When free drainage has been established, irrigations with Dakin's solution or other chemicals may be carried out, making sure that adequate provision is made for free drainage of the irrigating solution from the chest after it has served its purpose. During the period of treatment, repeated estimation of the cavity's capacity should be made in order to follow the expansion of the lung and the reduction in the size of the pocket. Expansion of the lung is the result of retraction of scar tissue formed where the parietal and visceral pleuræ come in contact and is a slowly progressive process which can bring about obliteration of the pleural cavity in spite of its being open to atmospheric pressure. Respiratory or pulmonary gymnastics which at one time were in considerable favor are now considered to be less important than formerly. It is a well recognized fact that they do not maintain lung expansion but it must be admitted that the use of blow bottles or other such procedures does favor a stretching of the visceral pleura and does bring about exercise of chest muscles and diaphragm and tends to reduce or help to correct the atrophy of the thoracic muscles so frequently seen after an empyema. Drainage tubes are allowed to remain in the pocket until its capacity is reduced to 5 or 10 c.c., when they are removed. Their removal while a larger pocket is still present may predispose to a recurrence of the empyema or result in a chronically draining sinus. Frequent examinations should be made after the empyema is apparently cured to be certain there is no secondary localization or recurrence of the process.

Causes of Chronic Empyema

The factors which lead to chronic empyema are now pretty generally recognized and may be listed somewhat as follows:

1. Inadequate drainage. This may be the result of continuing aspiration too long, failing to recognize an empyema pocket for a considerable period of time, thus allowing the walls to become rigid, the development of secondary pockets which did not at the time of operation com-

municate with the primary cavity, or the improper placing of the drainage site at the bottom of the cavity.

2. Extensive pneumothorax, frequently the result of the injudicious use of open drainage early, before the lung becomes fixed to the chest wall.

3. The presence of bronchoplural fistulæ, particularly if communicating with a small inadequately drained lung abscess or bronchiectatic area.

4. The presence of foreign bodies such as unremoved drain tubes, bone sequestra or injected foreign material such as Beck's paste.

5. Osteomyelitis of the ribs, which may result in a chronic draining sinus or produce a bony foreign body which subsequently enters the pleural cavity causing suppuration.

6. Tuberculosis. Smears, cultures, guinea pig inoculations and microscopic sections of excised pleura should be utilized in all chronic empyemas, particularly where there is anything peculiar about the mode of onset or doubt as to the original cause of the abscess in the pleura. In the presence of secondary infection it is the exception rather than the rule to find tubercle bacilli even in a known tuberculous empyema and microscopic section of the pleura may fail to reveal the condition even when it is known to be tuberculous, the secondary infection overgrowing and burying the tuberculous process in granulation tissue.

Conclusions

Empyema should be recognized early and treated promptly according to accepted surgical

principles with due consideration to the special physiological problems encountered in the chest. The first effort should be to save life and then to secure prompt healing of the abscess cavity. Each patient must be considered as an individual and the method or methods best suited to his particular problems chosen for use. The simplest types of treatment adequate for the occasion should receive first consideration at all times. Complicated methods require much attention, and, while they may give good results with special equipment, have but little place in general work.

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CONGENITAL HYPERTROPHIC PYLORIC STENOSIS*

OLIN W. ROWE, M.D.

Duluth, Minnesota

A SERIES of cases of congenital hypertrophic pyloric stenosis was reported by me several years ago which included three deaths. That series, beginning in 1910, left also much to be desired in regard to management. At the beginning we knew little of pre-operative care, choice of anesthetic, type of operation (my first case survived a posterior gastro-enterostomy) or post-operative treatment. The analysis of our

experiences included the time required for conservative treatment, causes of death and the adequacy of certain details in the management. As a result some conclusions were reached which we believed would be of help in the treatment of later cases. That something was learned is indicated by the fact that I am now able to present a new series of more than fifty consecutive cases without a death.

Rather than present a statistical analysis of case records I will discuss some features of the

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condition as it is presented to the physician and certain questions arising in the management which seem to me to be of importance.

The cases treated with the minimum risk are those discovered early. Fortunately the number of babies in this category is increasing. This is largely due to improved diagnostic acumen on the part of physicians, and to a lesser extent to the activities of visiting nurses and a consciousness on the part of the laity that persistent vomiting in an otherwise healthy infant may indicate a serious condition. One mother having three cases of stenosis in her first four children recognized the last two herself and the case in the child of an acquaintance.

The first symptom, directing attention to the possible existence of this condition, is vomiting. This usually appears about the second week but rarely may be delayed until after the fourth week. Accompanying this is a weight loss, a decrease in the size of the stool and in the amount of urine. If vomiting persists, is frequently projectile in type, and if the vomitus is free from bile and occasionally exceeds the volume of food taken at the last feeding, a search should be made for further evidence of obstruction.

Visible gastric hyperperistalsis moving in a definite course from the left costal arch diagonally across the epigastrium and disappearing in the right hypochondrium about the nipple line, usually appears a few days after the beginning of the vomiting. This may be seen during or after a meal, or may be brought out by tapping on the cardia. These waves may occur in other conditions. The ease with which the waves are elicited, or the size of the waves, seemingly has no relation to the extent of the stricture at the pylorus. By far the largest waves I have seen persisted for months in a baby with an easily controlled pylorospasm. Even the rarely seen peristaltic contraction of the entire stomach which presses the organ against the abdominal wall where it can easily be seen in relief may occur without a pyloric tumor. While gastric hyperperistaltic waves are of diagnostic significance it was felt that some of our cases might have been diagnosed earlier had valuable time not been lost waiting for this confirmatory evidence. These waves when present, associated with vomiting, demand a careful examination for a pyloric tumor.

The tumor may not always be found in the first days following the initial vomiting. Later it can be palpated at each examination. It is usually located rather deep in the abdomen near the right nipple line slightly above the level of the umbilicus. It is hard, about the size and shape of a small pecan and is movable. It is to be sharply differentiated from the larger, softer, less sharply defined mass occasionally found in pylorospasm. Repeated examination with this in mind will lead to a positive diagnosis of hypertrophic stenosis, and enable us to assure the surgeon that he will find a tumor at operation. As in the case of the peristaltic waves, the size of the tumor may have no relation to the amount of obstruction. The larger tumors are usually found in children of three months or more.

I have discontinued the routine use of the roentgen ray in the diagnosis of this condition. It is felt that all the data, including the amount of gastric retention, can be determined with less disturbance to the patient by other means. Even the use of the Meuwissen and Stooff technic and its modifications has been discarded. These methods will give some information in regard to the length of the tumor and possibly the amount of occlusion, but it will not be a deciding factor in referring the child to operation, nor will this knowledge be of material benefit to the surgeon. In some instances the disturbance caused by even small amounts of barium and, more important, the interruption of other indicated procedures outweighed the benefits derived.

The condition of the child, and the severity of the symptoms, determine the immediate treatment. This can never be a routine procedure. At one extreme is the young infant with vomiting of only a few days' duration, with little weight loss, slight dehydration and little disturbance in mineral balance. In such cases fluid parenterally, either normal saline or possibly glucose solution, will so improve the condition that conservative treatment can be safely attempted, or, if surgery is elected, that further pre-operative preparation is unnecessary. At the other extreme is the unfortunate infant of three or four months that has failed to such an extent that it can be classified as an advanced stage of marasmus or atrophy. In some of these babies marked dehydration and alkalosis are potent factors in

determining the outcome. The patient in the more serious condition is slate gray in color. The respiratory movements may be so depressed that only by close inspection can it be determined that it is breathing at all. If disturbed by pain, or the ill-advised efforts of anxious attendants, the child will breathe more deeply for a time and then relapse to shallow, slow respiratory movements frequently interrupted by prolonged apneic pauses.

Signs of tetany such as laryngo-spasm, hyper-spasticity or even generalized muscular rigidity and occasionally convulsions are seen in extreme cases. The procession of events in such cases is so rapid that therapy may have to be controlled entirely by clinical observation, rather than by the more accurate but time-consuming laboratory procedures. The first treatment is directed toward the immediate relief of the symptoms of tetany. This is followed by attempts to restore normal bicarbonate and pH contents of the body fluids together with the restoration of the electrolyte balance in its broader sense including water content. Convulsions are treated with inhalations of oxygen and carbon dioxide in the proportions of two to one. Chloralhydrate per rectum is valuable. Calcium chloride is given intravenously usually in five per cent solution, the dosage being one-fourth cubic centimeter per kilogram of body weight. Calcium gluconate may be used at this time or later. Further dilution of the blood and reduction in the bicarbonate concentration may be accomplished indirectly as a result of selective renal activity following the administration of normal saline or Ringer's solution. This may have to be continued over a period of a day or more (Hartman).

After the immediate emergency is controlled, a slow response may make transfusions advisable. This frequently abused procedure has often procured a favorable effect when other measures singly or combined have failed to place the child in a condition permitting operation. Small transfusions with frequent, often daily, intravenous injections of glucose are useful therapeutic measures. In fact no substitute seems quite so satisfactory. The desired results, often delayed, may appear quite suddenly after some days. Whether this is due to a cumulative effect of the blood or a specific reaction to the last blood used is questionable.

In the early, milder cases sufficient time is afforded to make a serious attempt at the so-called medical treatment. The period necessary to determine the efficacy of such measures varies, but rarely more than a day or two is required. During this period, in even the very mild cases, the child must be kept under conditions permitting of the most exact observation. An infant in apparently fair condition can become an exceedingly serious risk after a few hours of vomiting. If this is kept in mind, little harm can be done and if the treatment proves unsuccessful, the infant is in condition for almost immediate operation.

The measures employed in the non-operative treatment must first maintain absolute control of the infant's chemical and physical processes. In the mild cases this can be accomplished almost routinely with the use of sodium chloride solution by hypodermoclysis given every twelve hours. The food offered is preferably breast milk, if available, or evaporated milk thickened with cereal after the method described by Sauer and others. The use of drugs before feeding may be necessary. Atropine, if used, is started very cautiously with doses gradually increasing until the desired physiological effect is produced. It is an extremely dangerous drug. The reaction of a child to a measured dose may vary at times. The use of phenobarbital is much safer. No bad effects have been observed from the drug given in rather large doses over a prolonged period.

In only one very mild case of this series was medical treatment advised. In one of the more severe cases operation was refused and the child hospitalized for nearly one half year. It is usually necessary to continue this type of treatment for many weeks in the mild cases and in the more refractory ones for several months. The risk of intercurrent infection is obvious. I feel that medical treatment at its best is uncertain even under the strictest supervision. It is impractical from an economic standpoint. Surgical treatment on the other hand, with adequate pre-operative measures, is quick, certain, and permanent in its results.

The first question arising in the operative treatment is the choice of anesthetic. My associates have adhered to local anesthesia. The method of local infiltration of skin, subcutaneous tissue and muscle with five-tenths to one pe

ent solution of novocaine with ephedrine has impressed me as the safest from all standpoints. It does not lengthen the time of operation, and healing of the wound has not been interfered with to any appreciable degree. In addition to its safety, the incidence of nausea is reduced markedly because of the absence of irritating anesthetics and because the child has complete control of its reflexes during and after the operation; food can be tolerated a day earlier than when inhalation anesthetics are used. Surgeons who find this anesthetic unsatisfactory usually use ether by the drop method.

In every case the operation has been a Fredet-Ramstedt submucous pyloroplasty. The technical difficulties are few and in experienced hands easily handled. The apparent simplicity has been the source of danger to the patient. The surgical mortality would seem to depend upon the surgeon's recognition of the differences of technique in infants and adults.

A few essentials are necessary for success. Great importance is laid on the maintenance of body heat during the operation. Dr. W. A. Coventry, who has operated the majority of cases in this series, emphasized the following points. The incision should be high enough to permit the right lobe of the liver to underlie the abdominal wound. This facilitates closure of the wound and prevents post-operative hernia. The separation of all of the fibers down to the mucosa must be complete. (One of our cases had been previously operated elsewhere without relief. On re-operation it was found that the fibers at the distal end of the tumor had not been cut.) The transition from the thick pyloric tumor to the thin duodenum is rather abrupt. Extreme care must be taken not to open through the mucous membrane.

The bleeding from the incision of the tumor must be completely controlled. In the younger children this is accomplished easily by hot packs. In older children the vessels must be ligated. If bleeding cannot be stopped in this way a small piece of muscle from the rectus may be sutured in the pyloric incision. It is extremely important that all bleeding from this source and from the abdominal wall be con-

trolled before the abdomen is closed. Occasionally normal saline solution has been run into the abdomen before closing the peritoneum. After closure a piece of gauze just large enough to cover the incision is placed on the wound and held in place with adhesive straps, long enough to hold the dressing in place, but not so long, or tight, as to interfere with the abdominal respiratory movements or cause regurgitation. The light dressing permits the detection of hemorrhage from the wound if such occurs.

The postoperative treatment again depends upon the condition of the child. The very young babies with easily managed pre-operative care can be given water in small amounts two hours after the operation. This is repeated every fifteen minutes, slowly, increasing the amount offered. Eight hours post-operatively food, preferably breast milk, is given. This is repeated every three hours in slowly increasing amounts until sufficient is taken to meet the nutritional demands. In the more severe cases hypodermoclysis of normal saline or glucose solution may be indicated. In those instances where the nutritional disturbance has been prolonged, resulting in marked fluid and salt imbalance, the same measures employed in the pre-operative treatment, including frequent small transfusions combined with glucose solution given parenterally, are necessary. Extreme difficulty may be encountered in not only establishing, but in maintaining, the child's physical and chemical balance. The reduced tolerance for food in such cases makes for slow progress. The most dreaded complication is enteritis.

The prognosis in congenital pyloric stenosis, if recognized early, is very good. In babies with pronounced changes in their physical and chemical processes success will depend largely on the pre-operative treatment. Surgery cannot be expected to correct irreparable changes in metabolism. With adequate preparation a surgical death may be regarded as an accident. When convalescence is established, the parents can be confidently assured that there will be no after-effects from the congenital defect treated in infancy.

MANDELIC ACID IN THE TREATMENT OF INFECTIONS OF THE URINARY TRACT*

EDWARD N. COOK, M.D.

Rochester, Minnesota

ONE of the most notable changes in the study of any certain disease or group of diseases during recent years is that concerning the etiology and treatment of infections of the urinary tract. For many years the general practitioner, and the urologist as well, have treated these conditions empirically with no scientific background for their methods. During the last five years much progress has been made and this improvement is directly attributable to the increasing knowledge of the bacteriology of the urinary tract and the response to various methods of treatment.

As early as 1917, Scholl and Janney published a detailed and comprehensive report concerning the reaction of the *Escherichia coli* to solutions of a different pH. They found that solutions which had a pH of less than 5.0 or more than 8.6 to 9.0 very definitely inhibited the growth of this organism. Even with this basic report, the clinical importance of determining the acidity of the urine and of demonstrating the presence of bacteria in the urine has not been generally appreciated. With the exception of the examination of the urine to determine the presence of the acid-fast bacillus of tuberculosis or the examination of urethral discharge for the *Neisseria gonorrhæa*, the bacteriology of the urinary tract has been regarded only with a passive interest. It was believed that if the organisms named previously were not present, then whatever bacteria might be found were either *Escherichia coli* or cocci and that from a therapeutic standpoint it did not matter which they were. As a result of the newer knowledge it is known that the character of the lesion varies considerably with different organisms and certainly these bacteria respond differently to treatment. Coccal infections usually predominate in the renal cortex and are best treated with intravenous injections of neoarsphenamin, while bacillary infections involve primarily the central and collecting portion of the kidney as well as the

ureter and bladder, and respond best to the acidification therapy plus either the ketogenic diet or mandelic acid.

In every case of infection of the urinary tract routine microscopic study of the urinary sediment is essential. A freshly voided specimen from the male should be collected in two glasses and a catheterized specimen from the female should be used for examination. A wet smear of the centrifuged urinary sediment should be examined first, and the presence of pus cells, erythrocytes, crystalline elements, epithelial debris, spermatozoa, mucus, or bacteria should be noted. An estimation of the amount of pus and blood should be made. The absence of pus does not necessarily exclude the presence of bacteria. A dry smear of the sediment is then made and stained by the Gram method. This is examined for the presence of bacteria. The organisms, if present, may then be divided into four great groups: first, bacilli, which hold the initial stain and are Gram-positive; second, bacilli, which lose the initial stain, take up the counter-stain and are Gram-negative; third, cocci, which hold the initial stain and are Gram-positive; fourth, cocci, which lose the initial stain and are Gram-negative. The information gained from this simple diagnostic procedure is available to all clinicians and is of the greatest diagnostic and therapeutic importance. The determination of the exact organisms by a culture of the urine is necessary in order to carry out a scientific and sound form of treatment.

Schatten, in 1883, and Knoop, in 1905, were able to show that mandelic acid, when given by mouth to dogs, was excreted unaltered in the urine, and that it could be recovered from the urine in almost the same amounts as were given by mouth. The small amount not recovered is lost in the feces. This acid is an aromatic hydroxy acid which chemically is known as hydroxyphenyl acetic acid. Its use in the treatment of bacillary infections of the urinary tract was a logical development from the studies of the excellent results obtained in treating such in-

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fections by careful administration of the ketogenic diet. As the proper management of patients taking this diet presented many difficulties to the practitioner and the patient, its general adoption was not possible and the desirability of a more simple method of establishing bacteriostatic and bactericidal urine was self-evident.

Fuller definitely proved that betahydroxybutyric acid was the bactericidal agent of the ketourine, along with a low pH of the urine. Theoretically and practically, the oral administration of betahydroxybutyric acid as a urinary antiseptic was impossible because it is completely oxidized to carbon dioxide and water in the normal metabolism of the body. When given in conjunction with the ketogenic diet I was able to show a definite increase in its concentration in the urine. Rosenheim, after experimenting with similar organic acids, found that mandelic acid, when given by mouth, was recovered in the urine unchanged and that it would exert a definite bactericidal effect on the urine, providing the urine was highly acid and the concentration of the drug was great enough.

Mode of Administration and Dosage

Rosenheim first suggested giving the drug in the form of a 10 per cent aqueous solution and advised giving the equivalent of 12 gm. of the drug daily. Because of the rather bad taste of this solution, it was neutralized with sodium bicarbonate to make it more palatable. The dosage was 1 ounce (30 c.c.) of the solution, which contained 3 gm. of the acid, four times a day. Soon, however, many commercial preparations appeared on the market. These were in the form of the ammonium salt as an elixir or syrup of ammonium mandelate. The dosage of these preparations varies with the concentration of the salt. The elixirs are usually a 26 to 28 per cent solution, and a dose of 3 fluid drachms (12 c.c.) four times a day is necessary to supply the usual 12 gm. of the acid daily. The syrups are usually a 40 per cent solution, and a dose of 2 fluid drachms (8 c.c.) four times a day is required if 12 gm. of the acid is to be taken.

Any of the preparations is best given after meals, and because of the occasional gastric disturbance noted after administering the drug, the dosage should be reduced a half during the first twenty-four hours. After that time the usual

dosage may be taken with much less chance of distress.

Principles of Administration

Helmholz and Osterberg have shown by their experiments in the laboratory that the usual bacilli found in the urinary tract were definitely killed by a 0.5 per cent solution of mandelic acid at a pH of 5.5. As with betahydroxybutyric acid, a lower pH will not require such a high concentration of the drug. Conversely, a higher concentration of the acid will not require such a low pH. These facts are of the greatest importance because they clearly show the necessity of two essential points in the satisfactory management of patients undergoing this form of therapy. First, in order that the concentration of the drug in the urine will be 0.5 per cent or greater when given in doses of 12 gm. daily, the amount of fluid ingested in twenty-four hours must be limited to 1200 c.c. or less if the desired results are to be obtained. Second, the maintenance of a satisfactory pH of the urine is an extremely important point. The ideal pH has been definitely proved to be 5.5 or less, and unless this is maintained the final result of therapy will be discouraging. If sodium mandelate is used, acidifying drugs such as ammonium nitrate or ammonium chloride in dosages of 4 to 6 gm. daily will usually suffice. However, in using the ammonium salt of mandelic acid, the urine will maintain its pH at a satisfactory level, thus obviating the use of any other drugs. In some cases this low level will not be reached and the secondary acidifying drugs will have to be added. Besides the ammonium nitrate and ammonium chloride already mentioned, dilute hydrochloric acid or nitrohydrochloric acid may be helpful. Occasionally, these methods fail and the administration of the ketogenic diet has been required before the pH of urine could be lowered to a bactericidal level. In spite of these methods of lowering the pH of the urine, there still remains a small group of obstinate cases in which it is impossible at the time to produce a urinary acidity of sufficient degree to produce, in conjunction with a satisfactory concentration of the drug in the urine, the desired bacteriostatic and bactericidal action.

The most satisfactory results have been obtained by administering the drug in the prescribed dosage for six to twelve days. If at

the end of this period the bacteriologic examination of the urine reveals that organisms are still present, experience has taught that it is advisable to discontinue administration of the drug for ten to fourteen days and then institute a second course of treatment. This is done for two reasons: first, the organisms seem to build up a tolerance to the drug after a certain length of time; second, the factor of renal irritation produced by the drug is not definitely known as yet, and such irritation should be guarded against by not giving the drug for too long a period.

Types of Cases

As with the ketogenic diet, mandelic acid has been most efficacious under the following anatomic conditions: (1) when the urine is brought in direct and continuous contact with the infected surface; (2) when the infection is largely superficial; (3) when there is no marked cicatricial change, resulting from long-standing infection, in the renal tissues, and (4) when there is no obstruction to the drainage of urine. Mandelic acid when given in the dosage described will sterilize the urine in almost 90 per cent of the cases of uncomplicated bacillary infection of the urinary tract. Occasionally, two courses of treatment are necessary. The organisms which have responded to treatment include *Escherichia coli* and *Aerobacter aërogenes*, in addition to members of the genera *Proteus*, *Pseudomonas*, *Alcaligines*, *Salmonella*, and *Shigella*. Cocci are, as a rule, not affected by the administration of the drug to adults. However, the *Streptococcus faecalis* is the exception to the rule and usually can be eradicated with this form of therapy.

When one considers the groups of cases in which the infection of the urinary tract is associated with cicatricial deformity as the result of long-standing process or with some secondary pathologic change, the eradication of the organism is difficult and in many cases impossible unless the complication is removed. Even then, it may still be difficult and will require very careful management and close observation of the patient.

The results of treatment in the group of cases in which urinary infection was associated with chronic prostatitis are not nearly so good. Only about 50 to 60 per cent of these patients will respond to the initial treatment with mandelic acid, as this condition reinfects the urethra and

bladder. However, if the prostatitis is treated and mandelic acid given at frequent interval during the period of prostatic treatment, the bacilluria can be eradicated in a surprisingly large number of cases.

Residual urine in either the upper or lower portion of the urinary tract will definitely inhibit the action of the drug. Cicatricial change in the renal pelvis, calices, or ureter, secondary to a long-standing pyelonephritis, will usually render the action of the drug less effective. Urinary lithiasis, tumors, or foreign bodies in the urinary tract are common causes of poor results of treatment. However, administration of mandelic acid frequently will produce a considerable reduction in the degree of infection of the urinary tract in spite of such associated changes. Symptoms also may be definitely relieved. As a preliminary to instrumentation or surgical treatment of the urinary tract, the drug is frequently of value, even though elimination of the infection is not accomplished.

Frequently I am asked if the drug is indicated in acute infections of the urinary tract. I believe it is, although I do not advise reducing the fluid intake during the febrile period. It is true that a bactericidal urine will not be maintained but a bacteriostatic urine will be present. As the acute process subsides and the fever recedes, the fluid intake may be reduced to the desired level.

In cases of known renal insufficiency, the use of mandelic acid must be undertaken with care. In the first place, renal function must be good enough to excrete the drug if the desired results are to be obtained. In the second place, the administration of excessive doses of mandelic acid to an individual who has normal kidney will reduce renal function; such doses have produced death when given to animals. Consequently, I feel that the drug should be given cautiously whenever there is any impairment of renal function and that it should not be given when renal function is impaired to any great extent. To date, I have not seen any disastrous results from the administration of mandelic acid, no doubt because we have proceeded cautiously at the clinic. In some cases in which the value of the blood urea became elevated following the administration of the drug, it returned to normal as soon as administration of the drug was discontinued.

Complications

With the newer and more concentrated forms of mandelic acid, gastric disturbances are occasionally noted. These may be reduced to a minimum if the drug is given after meals and if the dosage is reduced during the first twenty-four to forty-eight hours. After this period the dose may be gradually increased as the patient becomes accustomed to the drug. In some cases, other preparations may be substituted with less reaction on the part of the individual patient.

Diarrhea is rarely seen when the newer forms of the drug are used, and dysuria is observed very rarely. It is open to question whether or not it is attributable to the mandelic acid therapy.

Hematuria has been seen in 1 to 2 per cent of cases and has always been microscopic in character, with the exception of two cases in which gross hematuria was noted. The bleeding in every case ceased immediately after discontinuing the administration of the drug. Certain cases have been observed in which microscopic hematuria was present during one course of the treatment and entirely absent during subsequent courses.

General symptoms are occasionally noted and may vary considerably in character and severity. Certain patients have experienced tinnitus and headaches after taking the drug, and in a few cases skin reactions have required the stoppage of the medication. Similar reactions have been

noted after the administration of ammonium chloride and ammonium nitrate, and one wonders whether or not the ammonium radical is not at fault rather than the mandelate radical. Whether or not these general symptoms are the result of irritation produced by the drug or are attributable to an idiosyncrasy to the drug cannot be said; however, when these are present, the physician should proceed with care.

Summary

Mandelic acid, when properly given, will produce a bactericidal urine. In 90 per cent of cases of uncomplicated infection of the urinary tract the urine will be rendered sterile. In cases of complicated infection the drug will frequently reduce the amount of infection present and is of help in the preoperative preparation of patients for operation. In more than 600 cases in which the drug has been given at the clinic, we have seen no permanent ill effects.

If the desired results are to be obtained the reaction of the urine must be followed closely. The fluid intake must be limited to 1200 c.c. or less, and the pH of the urine must be 5.5 or below. If the drug is administered to a patient whose renal function is decreased, the patient should be watched carefully and the administration of the drug should be discontinued if any signs of renal irritation or decreased renal function appear.

THE TECHNIC OF RADIUM TREATMENT OF CHRONIC ENDOMETRIAL HYPERPLASIA*

G. S. REYNOLDS, M.D.

The Minnesota State Sanatorium

Ah-Gwah-Ching, Minnesota

EVEN though the use of irradiation in benign uterine hemorrhage is no longer a controversial topic, the effectiveness of the present radium technic might be doubted, as seen in the case here presented. A modification of the applicator now in use is proposed.

Keene traced 476 of 527 cases of uterine hemorrhage resulting from myomata or myopathies treated with irradiation. Of these, 96 per cent were cured, and the mortality rate was 0.18

per cent. Doderlein found only thirteen of 804 patients for whom irradiation failed to stop uterine hemorrhage. Corscaden reports uterine hemorrhages cured by irradiation in 452 cases. In this series, radium was used predominantly. Only five of these patients were subsequently operated upon for recurrence of hemorrhage. This author emphasizes most consistent results from the larger dosage.

Fosdike (quoted by Bowing) maintains that radium produces its effect by induction of fibrosis in the uterus and not by its influence upon

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the ovary. He feels that the claims of the effect of intra-uterine radiation on the ovary ignore the inverse square law of distance. The ovary is 3.5 inches distant from the radium. This dis-



Fig. 1. The improved applicator.

tance exceeds that at which radium has demonstrated its effectiveness upon tissues of this type when the usual radium filtration and dosage are employed. He describes animal experiments in which the radium is placed close to one ovary and eight centimeters away from the other ovary. The greater distance between radium and ovary corresponds to that in human intra-uterine application of radium. In these experiments it was observed that while the closer ovary was destroyed, the distant one was unaffected so far as microscopic examination revealed. Fosdike concluded, therefore, that in the human the ovary is beyond the effective range of intra-uterine radium as customarily applied.

This contention is contrary to general opinion, yet the following case supports it. Similar, though less striking findings have been noted in the author's experience.

Case Report

Mrs. C. P., white, female, age thirty-nine, was admitted to the hospital on July 26, 1928, complaining of abdominal soreness and backache. Menstruation was regular and normal. In 1919, her appendix and one ovary had been removed. Prior to her admission, she had been told that she had a pelvic tumor. Complete examination disclosed the diagnoses of postoperative pelvic adhesions and uterine fibromyomata. No gynecologic treatment was administered at this time.

She was readmitted to the hospital in June, 1930, and at this time her perineum was repaired and radium

was inserted into the uterus. The usual short straight applicator was used. It contained 100 mg. of radium thus giving an intensity of 25 mg. per cubic centimeter throughout its active length of four centimeters, its total length being five centimeters. Filtration was through 0.5 mm. of silver, 1.0 mm. of brass and 1 mm. of hard rubber. Dosage was the unusually large one of 2,000 mg. hours.

The pathologic report of the preradiation curetting examined by Dr. Frank Hartmann reads as follows: "Sections show the uterine glands varying moderately in size and shape. All of them are lined by rows of high columnar epithelium. Interstitial tissue is abundant and shows some round cell infiltration. There are areas of bloody extravasation."

In spite of this radiation therapy, the patient was readmitted and a hysterectomy was performed on April 7, 1931. Examination of the excised uterus and the left ovary showed the upper third of the fundus markedly different from the lower two-thirds. The endometrium of the lower two-thirds was normal in appearance, whereas that of the upper third was covered by a thick, shaggy, hemorrhagic mucosa. A stenosis of the internal os was apparent, and one active ovarian follicle was grossly evident. Excerpts of Dr. Hartmann's pathologic report, which follow, confirm these observations: "The uterus is larger than usual, thick walled and contains on the left side a large fibroid tumor three centimeters in diameter. It projects into the endometrial cavity and is soft in the center. The endometrium in this area is smooth and intact. The mucosa in the fundus is hyperemic, while the lower part of the cavity is lined by a pale mucosa, which is sharply demarcated from the hyperemic fundal mucosa. The left ovary contains a small cyst filled with dark liquid blood."

From these observations and reports, it is evident that the superior third of the large fundus was untreated due to the inadequate length of the applicator. Coexistence within the uterus of a sharply limited area of hyperplastic endometrium, and an adjacent area of normal endometrium six months after intra-uterine radium treatment indicate that intra-uterine radiation in this condition primarily acts through its effect upon the endometrium and its blood supply rather than upon the ovary.

This evidence, then, confirms the reasoning and animal experiments of Fosdike. Further proof of the same fact consisted of a stenosis of the internal os resulting from proximity of the radium and its capsule during treatment.

In order to insure complete treatment of the uterine fundus and to prevent stenosis of the internal cervical os in the course of irradiation a new applicator was designed. It varies in length, depending upon the number of segment

required. An angle of 15 degrees is provided at the junction of the proximal and distal portions, as seen in the accompanying illustration. The distal portion is the length of the average cervix, and contains no radium. Thus, irradiation of the cervix, which is unnecessary, and consequent cervical stenosis are avoided. Total length of the fundal portion depends upon internal uterine measurement, as found with a calibrated uterine sound. A solid cross bar, applied to the cervix outside the external os, maintains the radium in the uterus in the desired position, and prevents the holder from slipping out of grasping range. Ample uterine packing maintains the applicator in position and displaces the bladder and rectum away from the radiation.

The advantages of this applicator are readily seen. No irradiation of the cervical canal occurs and stenosis is thus avoided. Complete irradiation of the uterine fundus obtains in every case. Furthermore, the cross bar makes removal of the applicator much less painful

through avoidance of contraction of the external os.

Summary

A case is presented showing sharply limited areas of chronic endometrial hyperplasia in the fundus and normal endometrium in the lower two-thirds six months after intensive radium treatment. This case confirms Fosdike's view that radium therapy in such cases affects primarily the endometrium and only secondarily, if at all, the ovaries. Consequently, this case also substantiates the facts learned by physical measurement of radium intensity at the usual distance of the human ovary from the radium, and the results of animal experiments in regard to this point. A modified type of intra-uterine radium applicator is described, and the advantages of its use are outlined.

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INDICATIONS FOR NEWER ANESTHETICS*

JOHN S. LUNDY, M.D. and EDWARD B. TUOHY, M.D., M.S. (Anes.)

Rochester, Minnesota

THE newer anesthetic agents that will be considered briefly are metycaïne, cyclopropane, evipal soluble (sodium n-methylcyclohexenyl methyl malonyl urea) and pentothal sodium (sodium ethyl 1-methyl butyl thiobarbituric acid).

Cyclopropane is an inflammable and explosive anesthetic gas and must be administered with oxygen by the soda-lime absorption technic. Therefore, its use is indicated when an inflammable general anesthetic agent may be used, when pulmonary disease is present, and when a general anesthetic agent is to be used. It is particularly indicated in thoracic operations, such as thoracoplasty, in cases in which marked pulmonary disease is present. Because of the large percentage of oxygen used with cyclopropane and because respirations do not become labored, cy-

clopropane is indicated as a supplementary inhalation anesthetic when spinal anesthesia has been inadequate, too short, or has been associated with vomiting. It is indicated as an agent for inducing anesthesia quickly, for the introduction of the intratracheal tube, especially if the throat has been sprayed with a local anesthetic agent and anesthesia is to be induced subsequently. The patient remains asleep just long enough for the introduction of the Magill intratracheal tube, which is a soft rubber tube of large bore. The tube is greased and introduced through the nose. In more than 60 per cent of the cases it will enter the glottis and trachea without difficulty and it will not be necessary to check its progress by intra-oral examination of the pharynx. If, however, it does not enter readily, anesthesia may be reinduced, the mouth opened, and a lighted tongue depressor or the

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laryngoscope may be used to introduce the tube through the mouth or the nose. Our knowledge of cyclopropane is not sufficiently established so that we are certain of its untoward effect upon the heart, and so we feel that it may not be indicated in cases of cardiac disease. However, we are more or less certain that the technic of its administration is safer if the pulse is palpated throughout the period of induction than if the pulse is not palpated. It seems to us that certain patients do not tolerate cyclopropane as well as others, and this is reasonable because it is true of many other anesthetic agents. Whenever the pulse begins to alter noticeably in its character and its fullness, we feel that a further concentration of cyclopropane in the inspired gases should not be brought about, but rather that the cyclopropane already present should be diluted either with nitrous oxide or oxygen. If this is not sufficient to bring the patient to the proper state of anesthesia, ether should be added rather than more cyclopropane. If this technic is followed there will be fewer contraindications noted in the administration of cyclopropane than otherwise. Preliminary medication is indicated, we think, prior to the administration of cyclopropane. The premedication usually consists of pentobarbital sodium (nembutal) $1\frac{1}{2}$ grain (0.097 gm.) the night before operation, followed in the morning by $1\frac{1}{2}$ grain (0.097 gm.) of pentobarbital sodium, $\frac{1}{6}$ grain (0.01 gm.) of morphine sulphate, and $\frac{1}{150}$ grain (0.0004 gm.) of atropine sulphate, given thirty to forty minutes before anesthesia is induced. However, if the patient is at all sensitive to drugs, they may be omitted. Where one previously has used ethylene, cyclopropane may be considered applicable unless the patient does not react favorably to it.

Tribrom-ethanol (avertin), although not entirely new, warrants consideration. It may be administered to persons of all ages but seems to be especially valuable when administered to children, who tolerate it with relative safety, in fact, better than do adults. Preliminary medication is not necessary with avertin, although it may be used. The dose should not be larger than that required to produce basal anesthesia. This dose can then be supplemented, if necessary, by local anesthesia or inhalation anesthesia, or both. The solution of tribrom-ethanol is not

as convenient to prepare as solutions of the barbiturates, as it must be mixed with water at a definite temperature and tested with Congo red indicator to determine whether or not it is usable. Its use in obstetric practice is no more valuable than the administration of olive oil and ether by rectum. It is indicated in cases in which conditions must be fireproof and in cases in which the patient is nervous. It is especially indicated in cases in which the patients are children who are less than ten years of age, when one would usually wish to use a general anesthetic, but an inhalation anesthetic is to be avoided. It is an advantage sometimes to introduce the intratracheal tube in a case in which an anesthetic dose of tribrom-ethanol has been administered. This drug may be used advantageously in many cases in which the intratracheal method of administering nitrous oxide and oxygen is not available.

Metycaine^{4,5} is a local anesthetic which is also a surface anesthetic; it may be used as a spray in the throat, as an infiltration anesthetic in the eye or in the urethra. It may be injected to produce infiltration anesthesia and it may be used to produce block anesthesia and spinal anesthesia. A 1 per cent solution of metycaine seems to produce quicker and longer anesthesia than does a 1 per cent solution of procaine. This seems to be especially true in block anesthesia. Metycaine is compatible with epinephrine and cobefrin, and this addition prolongs anesthesia and makes a less bloody field than otherwise. Metycaine is especially indicated in cases in which a sensitivity to procaine has developed, but even then a patch test will usually reveal whether or not the patient is more sensitive to the procaine than he is to the metycaine. It is also indicated in the practice of a surgeon or a dentist who has procaine dermatitis. In most instances he can use metycaine without suffering from its use. We feel that metycaine is indicated then as a substitute for procaine whenever there is any special reason to avoid procaine, and that it has surface anesthetic properties which procaine does not have in any marked degree.

Evipal soluble and pentothal sodium,² when administered intravenously, bring about anesthesia quickly, and have a transient effect. This method of inducing general anesthesia is the least unpleasant of all from the standpoint of

the patient. We feel that it is contraindicated in cases in which the patients are children who are less than ten years of age, in cases in which respiratory obstruction is likely to develop during operation, in cases of dyspnea, especially if the condition is pulmonary, or if marked and of cardiac origin. We have found that the patient should be able to lie on his back and breathe without dyspnea as far as the heart is concerned, if he is to be given one of these agents. These agents are indicated when fireproof conditions are essential and a general anesthetic is desired. The method is indicated for short operations in which pronounced relaxation is unnecessary, and for patients who must have a general anesthetic and cannot tolerate the application of a mask to the face because of painful conditions due to some defect or lesion or as a result of a previous operative wound. It is indicated in the control of convulsions whether they occur in connection with general anesthesia or are the result of tetanus, strychnine poisoning, eclampsia, or any other condition. By thus controlling the symptom, measures for the control of the condition may be instituted before the patient succumbs to the complication. Intravenous anesthetics are indicated in small doses for the induction of anesthesia, to be maintained by inhalation anesthesia in cases in which patients are exceedingly nervous and have suffered from extreme nausea following the administration of previous general inhalation anesthetics. They are also indicated for the removal of drains and packs which would otherwise be painful, for the resuturing of wounds, for the removal of foreign bodies, and the biopsy of lymph nodes or lesions which are so small that they might be lost if a local

anesthetic were used. It is indicated for encephalography and ventriculography, in cases in which patients are unmanageable or intolerant of pain, or whose condition or age makes them uncoöperative. It is indicated for bronchoscopy or esophagoscopy in certain cases, provided that the throat and passages to be examined are anesthetized with a local anesthetic agent beforehand, the same as though the intravenous anesthetic were not to be used. It is not indicated for laparotomy except in unusual cases, nor for operations on the throat, as the pharyngeal reflex is not dulled, but in some cases is increased in activity.

An intravenous anesthetic may be used in conjunction with other diagnostic measures in estimating preoperatively the values for the blood pressure that will probably result from surgical measures to relieve hypertension.¹

Pentothal sodium should be used in 5 per cent solution, by the intermittent technic, using a paper or cotton "butterfly"³ to indicate that the respiratory passage is patent and being used. Anesthesia is best induced in thirty rather than ten seconds. The relative safety of this anesthetic agent depends on the caution and judgment as to how and when it should be used.

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COSMETIC DERMATITIS*

FRANCIS W. LYNCH, M.D.

Saint Paul, Minnesota

ALTHOUGH cosmetic dermatitis does not affect the patient's health, it is a distressing complaint which deserves recognition and treatment. Its correct diagnosis is of further importance because a large number of cases of dermatitis are thus removed from that diagnostic

catch basket, eczema. Many additional cases of cosmetic dermatitis have probably been diagnosed in the past as ringworm or seborrheic dermatitis.

Any external application used to improve one's appearance is a cosmetic. Thus the term cosmetic dermatitis refers to eruptions from many causes and on many areas, from the

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scalp as a result of dyes or tonics to the toes after the use of a nail lacquer. Because of the large number of manifestations of dermatitis from cosmetics, their description would require considerable time and space. It will be more profitable to restrict the discussion at this time to the more limited sense of the term, referring only to eruptions on the face and neck resulting from preparations in common use, such as soaps, creams and powders. χ

Cosmetic dermatitis is fairly common because of the general use of preparations capable of producing such eruptions even though no popular brand of cosmetics is likely to cause any large number of reactions. One reason that physicians do not see many cases of cosmetic dermatitis is the patient's recognition and removal of the cause of the eruption before the dermatitis has become severe enough to require professional attention. Questioning of women as to such experience indicates that it is by no means uncommon. Another reason the diagnosis of cosmetic dermatitis is uncommon is the tendency of the physician to regard these eruptions as examples of other conditions with which he is more familiar.

The diagnosis of cosmetic dermatitis is not always acceptable to the patient. The millions spent in advertising the miracles to be expected from cosmetics (with no mention of any possible ill effects) produce a state of mind unreceptive to a tentative or inconclusive diagnosis suggested by the physician. Two objections to this diagnosis are commonly offered by the patient: (1) the high quality of the preparations she uses; and (2) their previous use by herself or her friends without ill effect.

Even though the ingredients may be expensive, this quality is no index of the likelihood of idiosyncrasy in the purchaser. Since the price paid for a cosmetic depends far less on the cost of the ingredients than on the advertising and merchandising methods employed, that price is a poor criterion of the ability of the cosmetic to produce dermatitis. Whether the price be high or low there is a possibility of dermatitis.

The second objection raised by the patient (previous use without ill effect) is more reasonable but is easily explained by the fact that in idiosyncrasy a previous application of the irritant factor is probably necessary to sensitize the individual. In some instance the time required for

sensitization is short, in others it may be many months. Thus the patient's history as to the length of time of previous use of the cosmetic may vary considerably. It is not necessary that the cosmetic acting as the precipitating cause has been previously applied, because the sensitizing application may have been produced by another preparation containing the same or a closely related substance.

In most instances of dermatitis from creams or powders either the dye or the perfume content of the preparation causes the reaction. The alkali content of soap is generally regarded as the cause of dermatitis although some recent observations suggest that this conception may be an error and that the color or scent are more commonly at fault. With medicated soaps a further possible cause of dermatitis lies in the antiseptic content.

The manner of development of cosmetic dermatitis may be either chemical irritation or sensitivity (idiosyncrasy). In many instances it is difficult or impossible to distinguish between these two types of reactions but in general it may be stated that chemical irritation requires no sensitization by previous contact (that is, the very first application may result in an inflammatory reaction), while in true allergy the first application of the irritant produces no reaction, is followed by a latent period during which sensitization develops, and a later application results in a dermatitis.

Cosmetic dermatitis resulting from chemical irritation differs from an acid burn chiefly by the degree of the reaction. In both instances the irritant produces direct damage to the cutaneous tissues. Repeated damage of this type may result in a chronic inflammatory reaction which resembles eczema or chronic dermatitis of other etiology. One attempts to differentiate this mechanism from true idiosyncrasy or allergy to external applications resulting in contact dermatitis or eczema. The dividing line between chemical burns and contact dermatitis is thus not always clear and classification of cosmetic dermatitis into two groups, chemical irritation and idiosyncrasy, may not be entirely justified.

Those cases of cosmetic dermatitis resulting from idiosyncrasy or sensitivity can be classified with contact dermatitis (of which a common example is poison-ivy dermatitis). Most if not all such reactions depend on one or more pre-

primary or sensitizing exposures to a substance not irritant per se, but resulting in a changed reaction of the individual, so that later contact with the same agent results in a dermatitis. The relationship of contact dermatitis and cosmetic dermatitis to allergy is not completely clear.

Inflammatory reactions resulting from the use of bleaches, freckle-removers or other scaling preparations are rather common and are usually regarded as examples of chemical irritation although some instances apparently result from true sensitization. Another group of eruptions more familiar to older observers includes dermatitis from hair dyes and tonics; some of which are manifestations of chemical irritation and others result from idiosyncrasy to the drugs or dyes. Observation of these eruptions has aided in demonstrating that a cosmetic preparation applied to one area of the body may result in an eruption limited to, or more severe on, an adjacent cutaneous area. In spite of the fact that the irritant has been applied only to the scalp, no dermatitis need appear on that area but the eruption may be very severe and extensive on the face.

The nature of preparations used on the eye-lashes and brows is similar to that of hair dyes and their use can result in severe dermatitis of the eyelids and even in damage to the eye itself as from preparations such as Lash-lure.

Eruptions resulting from sensitivity to lipstick are relatively common because of the high dye content of such preparations. In its simplest form the reaction presents as a scaling of the lips (cheilitis exfoliativa). More severe inflammation may be observed and the eruption may even extend to the adjacent cutaneous areas.

A unique manifestation of dermatitis from cosmetics is the irregular hyperpigmentation of the cheeks and neck resulting from the application of toilet waters or perfumes. The presence of certain volatile oils in such preparations may sensitize the skin to subsequent exposure to sunlight and thus produce inflammation and hyperpigmentation which is spoken of as Berlock dermatitis.

Another form of hyperpigmentation is occasionally observed after the application of powders or creams containing lead or other metals (iron, mercury). Small granules of the metal may be deposited in the skin giving a stippled effect with a permanent tattoo.

The above mentioned forms of cosmetic dermatitis have been recognized for many years. There are in addition a number of less common eruptions due to eyewashes, mouth washes and dentifrices, astringent lotions, acne creams, depilatories, anti-sudorifics, and nail lacquers. Much more common, but less familiar because not properly classified until recent years, are those eruptions of the face and neck resulting from the use of powders, creams and soaps. The appearance and location of such eruptions make the diagnosis less obvious, and the daily use of the offending cosmetic makes the history less significant. These are the eruptions to be spoken of as cosmetic dermatitis in the following discussion.

Diagnosis

A diagnosis of cosmetic dermatitis should be considered in any patient presenting a dermatitis of the face and especially the eyelids. Creams and powders more often produce subacute or chronic inflammations whereas the appearance of acute symptoms suggests the group of special cosmetics previously mentioned. In cases of severe contact dermatitis of the face, a history of other contact is usually volunteered or easily obtained.

The clinical manifestations of cosmetic dermatitis caused by powder, cream or soap are not specific and such a diagnosis will be made only if one considers it as a possibility in all instances of pruritus, erythema, papular dermatitis or hyperpigmentation of the face and neck.

The eruption is frequently limited to the eyelids and neck because these areas are more sensitive to all irritants than are the cheeks, forehead and chin. At the onset of the eruption a slight itching or burning sensation is followed by redness and some degree of edema of these areas. If the eruption is limited to the cheeks or chin these signs are less pronounced and there is more tendency to development of a subacute dermatitis with small red or reddish brown miliary papules. It is seldom that vesiculation or a moist dermatitis results from cosmetics in common use.

As the eruption becomes more chronic the erythema changes to a reddish brown and then to a definite hyperpigmentation; the edema becomes a more brawny thickening, leading to lichenification. Scaling is also observed after the acute stage.

It is clear from this description that the clinical manifestations of dermatitis from soaps, creams or powders are practically identical and that they are not very different from many other types of dermatitis. The appearance of the eruption is not indicative of the particular irritant and depends much more upon the cutaneous characteristics of the individual than upon the external agent. Some hypersensitive individuals, for example, will respond with acute changes such as edema and vesiculation and others react to the same irritant with pigmentary changes and only a slight degree of inflammation. Thus as the eruption becomes more chronic it also becomes more difficult to differentiate from dermatitis of other etiology.

As a rule the untreated eruption of cosmetic dermatitis progresses to a certain stage, which may vary in different cases, and then tends to persist without further extension. Seldom does spontaneous desensitization occur and the eruption disappear without removal of the irritant, although appropriate treatment may result in considerable improvement even when the offending cosmetic has not been removed. Such a response to therapy without removal of the cause may mislead the diagnostician.

Differential Diagnosis

Individuals in whom the course of cosmetic dermatitis is subacute or chronic frequently present eruptions clinically indistinguishable from those due to sensitivity to ingested foods or inhaled allergens, instances of true atopy. Patients with cosmetic dermatitis are often subjected to skin tests for foods and pollens under the false impression that they are suffering from atopic eczema. Since the eruptions may be identical, one may be helped by a personal or familial history of atopy in the eczema patient. The association of symptoms of mucous membrane allergy such as conjunctivitis, rhinitis or coryza also suggest that the eruption may be atopic in nature and it has been observed by Dr. Rusten of Minneapolis that a persistent pruritus of the submental region is a common complaint in such cases and may help to differentiate them from instances of cosmetic dermatitis of the contact type.

Many reddened slightly scaling patchy eruptions of the face and neck have previously been regarded as ringworm or as seborrheic eczema

or dermatitis, less because of their clinical features than because of their behavior under appropriate therapy. More careful analysis of these eruptions may frequently lead to their diagnosis as cosmetic dermatitis. In persons having the seborrheic type of skin, sensitivity to cosmetics may result in a dermatitis closely related to the older conception of seborrheic dermatitis. Such a relationship should be emphasized in connection with the earlier statement that the type of eruption resulting from cosmetics depends more on the individual than on the external agent. This is not to be regarded as a denial of the existence of seborrheic dermatitis.

Another group of eruptions which are difficult to differentiate from cosmetic dermatitis is contact dermatitis of the same areas due to other irritants such as clothing (wool or silk sensitivity), sensitivity to dyes (from clothing or fur) or to plants (of which primrose is the most familiar example). It is obvious that on exposed areas such as the face and neck numerous external agents may produce a dermatitis in hypersensitive individuals. Since the mechanism of development of the dermatitis may be the same regardless of the nature of the irritant, it is obvious that clinical differentiation of the etiologic agent in contact dermatitis is frequently impossible. Although the diagnosis of cosmetic dermatitis may be suggested by the appearance of an eruption, differentiation from other conditions is impossible without a confirmatory history or by positive reaction to patch tests.

In some cases a careful history will confirm the diagnosis; in other cases a suspected diagnosis must be confirmed by clinical tests, either by ordinary application of the cosmetic or by the patch or contact test, which is familiar from use in testing of other cutaneous irritants. The results of such tests are not always accurate because of the different conditions under which the cosmetic may have been applied. The application which produced the dermatitis may have been massive in comparison with the test dose there may have been a cumulative action preceding the dermatitis; the dermatitis may have resulted from a combination of cosmetics which produce no reaction when tested singly. Treatment of the dermatitis frequently results in temporary desensitization. The development of the eruption may have been influenced by external

actors, such as exposure to sun or wind, or other trauma either before or after application of the cosmetic.

The application of the test to an area distant from the dermatitis may lead to error because of different physiologic conditions, such as variations in sweat and sebaceous gland secretion, or because the facial skin may have already given evidence of an eczematous tendency, thus making it more sensitive to materials which are normally non-irritant.

Positive reactions to either clinical or patch tests may be accepted as reasonably accurate, but the absence of a reaction must be regarded as inconclusive. In doubtful cases of cosmetic dermatitis a positive reaction to the patch test will be most helpful to the physician in his diagnosis and a series of such tests may aid the hypersensitive patient in choosing the proper cosmetics for future use. Since there is a tendency for many patients and most cosmetic manufacturers to deny that the dermatitis is a result of a given cosmetic, the test may be invaluable in supporting the diagnostician.

Therapy

Cosmetic dermatitis seldom affords much of a therapeutic problem after identification and removal of the irritant. Local therapy is usually indicated for relief of the burning or itching and for reduction of the inflammation; boric acid ointment or Lassar's zinc paste are often prescribed. If a dermatitis with small papules or papulo-vesicles is present an anti-pruritic or mildly astringent lotion may be more satisfactory.

The edema and redness accompanying a severe acute dermatitis may be relieved by the application of cold compresses of gauze moistened with diluted Burow's solution. As the process becomes less acute the treatment may be changed to a mild ointment or paste, as suggested above.

In the more chronic cases a mild (1 to 5 per cent) ichthyol or crude coal tar paste will be required. It should be applied three or four times daily, and relieves the symptoms promptly. The inflammatory thickening and hyperpigmentation are more resistant to therapy, requiring weeks or even months to disappear. When lichenification has arrived at an advanced stage, roentgen radiation will usually be required, and is the only treatment likely to give good results.

As a general rule, the longer the eruption has been present, the slower is its response to therapy. Eruptions of short duration frequently disappear within forty-eight hours after their recognition and the institution of appropriate therapy.

Non-allergic Cosmetics

No discussion of cosmetic dermatitis is complete without reference to "non-allergic cosmetics." The first purpose of these cosmetics was the removal of substances such as orris, starch and rice, which may result in coryza, rhinitis, or asthma in hypersensitive individuals. There has also been an attempt to prepare cosmetics containing only those ingredients least likely to result in dermatitis. Such preparations have been recommended for use in patients suffering from cosmetic dermatitis. In addition to these standard preparations, some manufacturers offer to cooperate with the physician in producing a product non-allergic for an individual patient, admitting that some persons may be sensitive even to "non-allergic" cosmetics.

In the care of cosmetic dermatitis it is frequently advisable not to allow the use of cosmetics for the first twenty-four to forty-eight hours of observation and treatment of these patients. At this point the profession was handicapped in its attempts to treat cosmetic dermatitis previous to the development of non-allergic cosmetics. Regardless of the physician's order not to use any cosmetic preparations during the time necessary for treatment of the dermatitis, many women failed to cooperate, thinking that the occasional use of a cosmetic could not do much harm. One may now allow the use of a non-allergic line of cosmetics in cases under careful observation, with mental reservation as to possible reactions.

If the patient's history is sufficiently clear to incriminate a single preparation as the cause of her cosmetic dermatitis, it is not always necessary to discontinue the use of her other cosmetics or order her to use non-allergic cosmetics. Non-allergic cosmetics provide the profession with a substitute to suggest rather than complete non-use of cosmetics by sensitive individuals.

After the dermatitis has subsided, the patient may wish to return to some of her familiar cosmetics, which may then be tested singly by patch tests or by the ordinary use of one preparation

at a time under careful observation until the cause of the dermatitis has been identified.

One cannot criticize the manufacturers of non-allergic cosmetics for suggesting a further prophylactic use of such preparations, particularly in those individuals presenting other cutaneous disease as evidence of a sensitive skin, or a history of allergy as evidence of idiosyncrasy.

Summary

Cosmetics such as soaps, face creams and powders are common causes of dermatitis in hypersensitive individuals.

Cosmetic dermatitis varies in severity from a mild transitory erythema and burning of the

eyelids to a chronic dermatitis with lichenification of extensive areas on the face and neck. It closely resembles contact dermatitis of other etiology, atopic eczema and mild instances of seborrheic dermatitis.

The diagnosis of cosmetic dermatitis may be confirmed by a careful history, by clinical tests with the suspected cause, or by patch tests.

Relief is obtained by removal of the irritant and by simple therapeutic procedures.

"Non-allergic" cosmetics are of value in the treatment of cosmetic dermatitis and for subsequent use in order to prevent recurrences of the eruption.

TREND OF MATERNAL MORTALITY IN MINNESOTA*

ROBERT D. MUSSEY, M.D.

Rochester, Minnesota

A NUMBER of statistical reports have appeared relating to maternal and infant mortality in the birth registration area of the United States and comparing the maternal and neonatal mortalities of the various states and those of other countries. As maternal and neonatal morbidity and mortality are the special concern of this Society, it seems proper at this first annual meeting to discuss the trend of mortality rates in the State of Minnesota as compared with other states and to mention briefly certain factors which influence these rates. It should not be too much to hope that the continued coördinated, intelligent effort of those particularly interested in the care of the pregnant woman will assist in influencing these rates favorably.

Comparison of maternal mortality rates in the United States with those in foreign countries is a subject the mere mention of which causes an immediate defense reaction in the minds of some American physicians. However, it is appropriate to this subject and I will deal briefly with it. The Children's Bureau of the United States Department of Labor published in 1935 a study by Elizabeth Tandy on the comparability of the maternal mortality rates in the United States and in certain foreign countries. In this study Dr. Tandy showed the unenviable position of the

maternal mortality rate in the United States as compared with that in other countries. This rate is not changed appreciably when similar methods of statistical collection are employed for the various countries. In her conclusions she said

"The study shows, *First*: that the methods of assignment in use in Australia, Netherlands, New Zealand, and Scotland are similar to that in the United States, and the official mortality rates are directly comparable within a small margin of error; that under the method of Denmark . . . the rate would be . . . higher and that under other countries included in the study, Canada, Chile, Czechoslovakia, England and Wales, Esthonia, France, Irish Free State, Italy, Northern Ireland, Norway, and Sweden . . . the rate for the United States would be somewhat lower.

"*Second*: That differences in methods of assignment (of causes of death) are insufficient to explain the high mortality of the United States as compared with foreign countries. . . . The official figure of the United States, which in the last few years has exceeded that of every other country except Scotland, remains high no matter what assignment is used. . . . Difference in definition of live birth is shown to have a negligible effect upon maternal mortality rates. Incompleteness of birth registration has more weight, but it, too, is insufficient to account for more than a few points of the excess of the United States rates over those of most foreign countries. Neither factor is of great importance in connection with comparability."

There is a great variation in maternal mortality in the various states, but in most of them there has been little reduction in either the total maternal mortality or in the mortality from

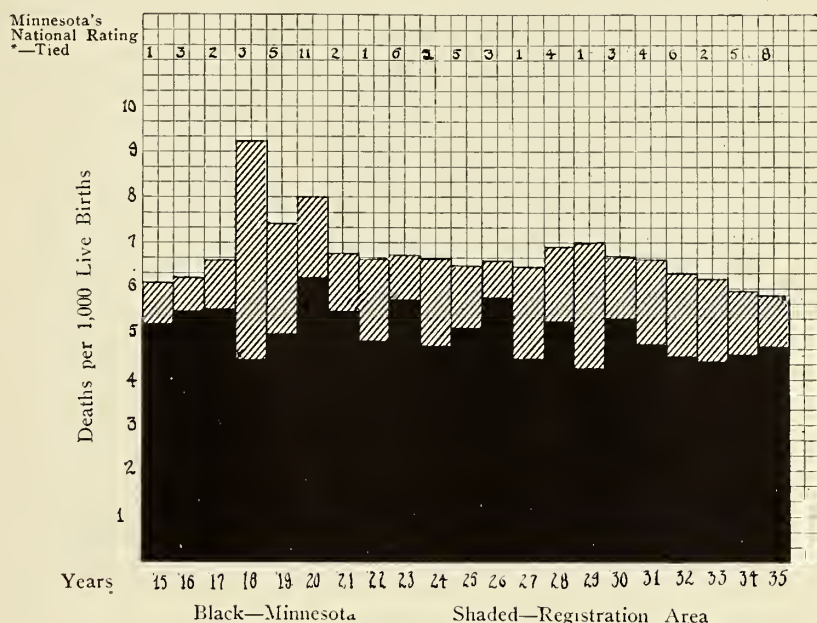
*Presidential address read before the Minnesota Society of Obstetrics and Gynecology, April 17, 1937, Rochester, Minnesota.

MATERNAL MORTALITY IN MINNESOTA—MUSSEY

puerperal sepsis. When the birth registration area was established in 1915, the maternal mortality rate was sixty-one per 10,000 live births. In 1934 it was fifty-nine per 10,000, and for

nal mortality for the ten states and the District of Columbia which originally comprised the birth registration area dropped from sixty-seven in 1921 to fifty-five per 10,000 in 1934.

MATERNAL MORTALITY



Adapted from Minnesota Department of Health, Division of Vital Statistics.
Fig. 1.

MINNESOTA URBAN AND RURAL MATERNAL MORTALITY

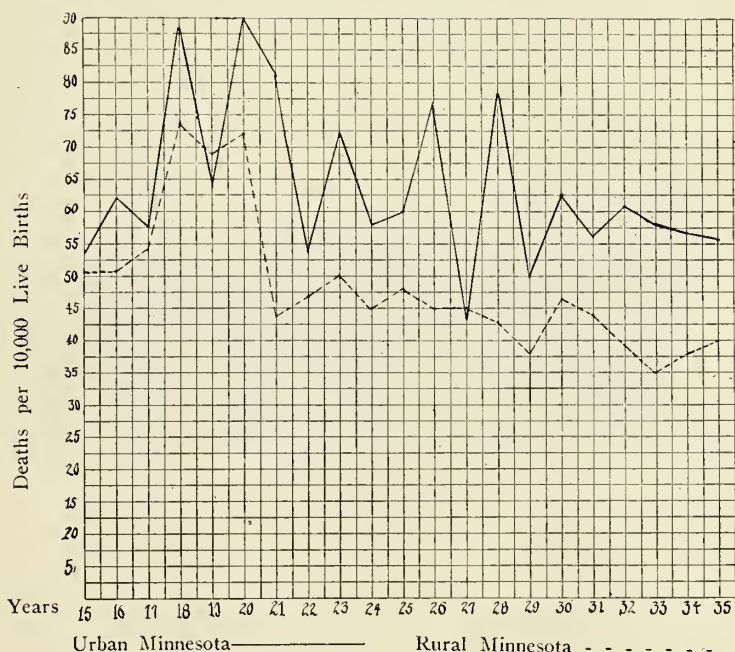


Fig. 2.

both years the rate for sepsis was twenty-four per 10,000 live births. That these figures are not entirely comparable is evident, as the mater-

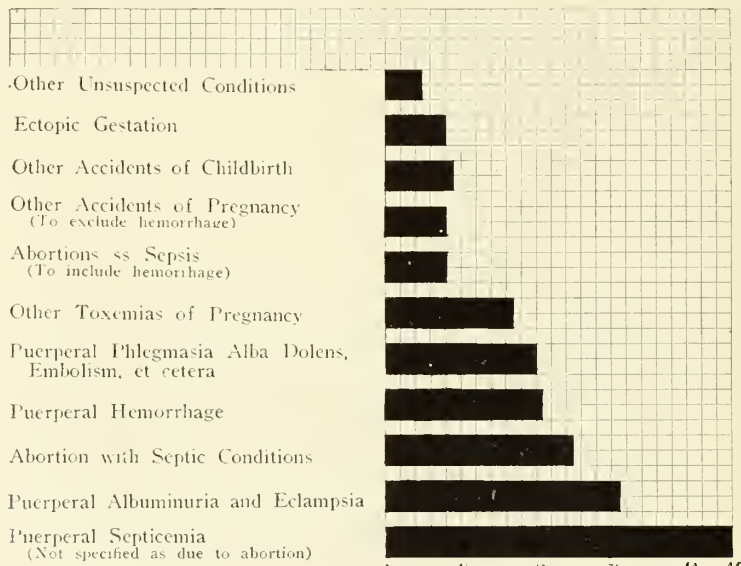
The maternal death rate in Minnesota has been relatively low in comparison with that for the United States birth registration area since

MATERNAL MORTALITY IN MINNESOTA—MUSSEY

1915 (Fig. 1).* It has been among the ten lowest rates every year except 1920, when it was tied for eleventh place with Utah. Minnesota has been among the three states with the lowest rate

this period. Within Minnesota itself the maternal mortality remained consistently lower in rural than in urban areas (Fig. 2), ranging from fifty-four in 1915 to forty per 10,000 live births in 1935.

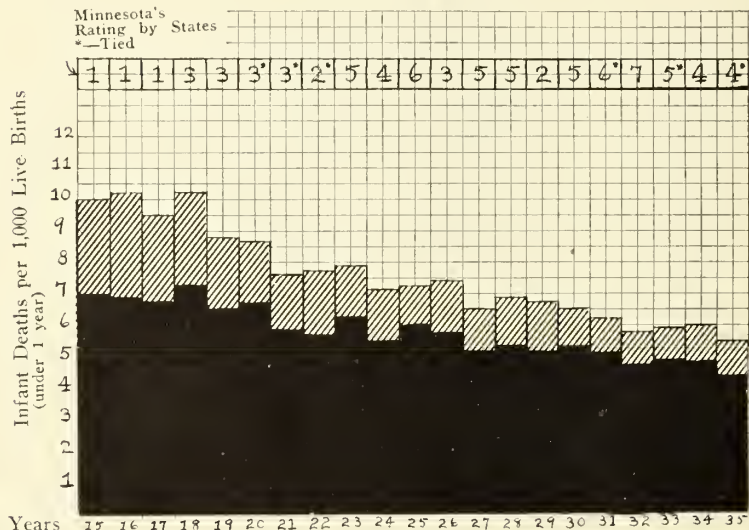
CAUSES OF MATERNAL DEATHS IN MINNESOTA—1936



Adapted from Minnesota Department of Health, Division of Vital Statistics.

Fig. 3.

INFANT MORTALITY



Black—Minnesota Death Rate
Shaded—National (Registration Area) Death Rate

Fig. 4.

twelve times in twenty years; if graded on its relative position each year it would place next to low in an average of the states in the registration area for the twenty years. Connecticut has the lowest average maternal mortality rate for

in rural areas.* The consistently higher maternal death rate in urban areas may be influenced by several factors, for example: the higher proportion of deaths from abortion in urban as compared to rural areas, and the transportation of parturient women with complications to urban

*The author wishes to express his gratitude to Mrs. Gerda Pierson, Director of the Division of Vital Statistics, State of Minnesota, for furnishing the data on maternal mortality.

*Statistics collected on the basis of 1,000.

hospitals and the deaths in urban hospitals of women who were delivered in rural areas. In 1936, there were 198 maternal deaths in Minnesota. These are allocated according to cause in

and a less spectacular drop from 65.4 to 45.2 per 1,000 live births in rural areas.

During this period from 1915 to 1935, live births per 1,000 estimated population have

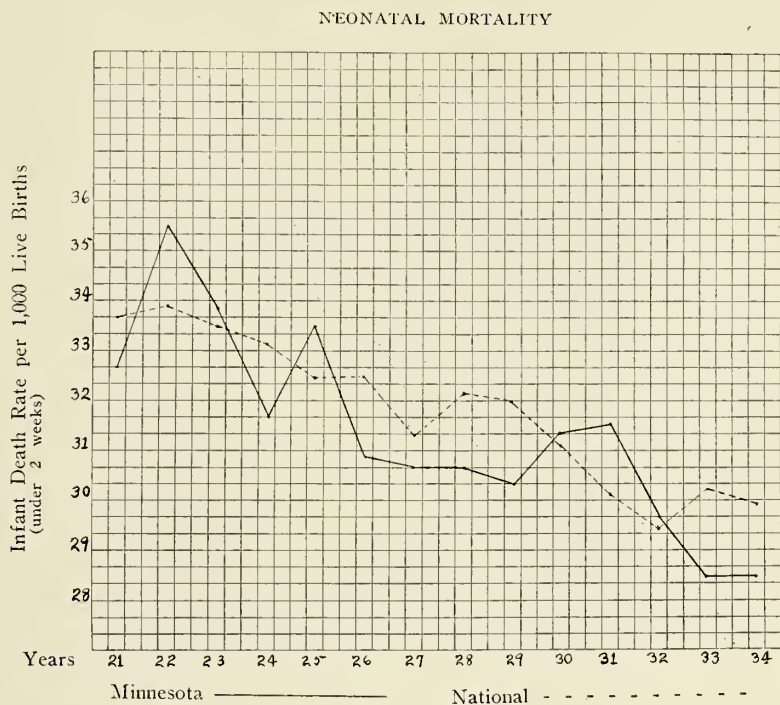


Fig. 5.

Figure 3. Forty-six (23.2 per cent) were due to puerperal sepsis, and thirty-one (15.6 per cent) were caused by eclampsia; twenty-five (12.6 per cent) were due to abortion and twenty-one (10.6 per cent) to puerperal hemorrhage.

It is of interest to note that the deaths of infants of less than one year of age per 1,000 live births each year in Minnesota has been consistently lower than the average for the United States birth registration area (Fig. 4). This has dropped from seventy for Minnesota and 100 for the area average in 1915 to forty-four for Minnesota and fifty-five for the entire area in 1935. Data for comparison of neonatal deaths (those under two weeks) in Minnesota and in the United States birth registration area were not available until 1921. From 1921 to 1934 the neonatal deaths have dropped from 32.8 per 1,000 live births in Minnesota and 33.6 in the birth registration area to 28.5 and 29.9 respectively (Fig. 5). Within Minnesota, comparison between deaths of infants less than one year of age in urban and rural areas shows a drop from 75.6 in 1915 to 35.3 in 1935 for the urban areas

dropped from 24.6 to 17.5 in Minnesota and from 25.1 to 16.9 in the birth registration area of the United States.

A study of stillbirths is being made by the Children's Bureau with the coöperation of the Sub-Committee on Stillbirths of the American Public Health Association. The purposes of this study, which is now being made in 216 hospitals widely scattered over the United States, as stated are:

"(1) To obtain statistical information regarding fetal and maternal conditions, associated with fetal mortality in hospitals . . . (2) To make possible the development of a classification of causes of stillbirth (fetal and maternal) . . . (3) To further the development of a special certificate for registration of stillbirths which will serve as a base for comparable statistics for the various states."

A preliminary report has been made of the first 1,000 stillbirths studied. About 15 per cent of these may be assigned to nonpuerperal conditions of the mother, the most important being syphilis (7 per cent), chronic nephritis (3 per cent), diseases of the circulatory system (2 per cent), and diseases of the respiratory sys-

tem (1 per cent). About 59 per cent of these stillbirths are assignable to conditions of the puerperal state: albuminuria (9 per cent), other toxemias (8 per cent), antepartum and intrapartum puerperal hemorrhage (16 per cent), and to accidents of childbirth (20 per cent). No cause of importance with reference to the mother was reported for about 25 per cent of stillbirths.

A study has been made by the Children's Bureau of 7,380 maternal deaths due to puerperal causes occurring in fifteen states during the years 1927 and 1928. The report of this study showed several factors which influenced the maternal death rate: Chief among these factors appear to be maternal care, abortions, the question of aseptic technic, operative deliveries, the management of eclampsia and pre-eclamptic toxemia and hemorrhage. On the question of maternal care, for example, it was found that 9 per cent of the patients received no medical attention at all or else only when dying. In 15 per cent of cases death followed abortion, and of the remainder 54 per cent had had no prepartum care. In fact only half of those who consulted a physician had any prepartum care, and only 1 per cent had first-rate prepartum care. The greater proportion of those dying of eclampsia had had poor prepartum care. In 43 per cent of cases the physician did not see the patient until the time of delivery. Of the 4,965 women who reached the last trimester of pregnancy, among only 899 was hospitalization known to be planned, but 1,072 more were admitted as emergency cases and 608 were admitted following delivery.

In only 48 per cent of the 3,619 cases in which a report was obtained from the physician was an aseptic technic said to have been used. However, the deaths of 73 per cent of 1,825 women who died following abortion were attributed to puerperal septicemia. A careful study of the records following operative delivery, not including cesarean section, indicates that 40 per cent of the deliveries were probably not carried out under aseptic conditions; 47 per cent of the women dying after cesarean section were probably septic.

Of these 4,965 women who reached the last trimester, more than 45 per cent had operative deliveries or operative deliveries were attempted. Of 718 deaths following forceps operation, 35 per cent were due to eclampsia, 26 per cent to sepsis, 7 per cent to embolus and 5 per cent to

placenta prævia. There were 618 versions, ninety-eight following attempted delivery by forceps; 272 versions followed artificial dilatation of the cervix. Cesarean section was carried out for 11 per cent of the women who reached the last trimester and for whom there was a report on operation for delivery. Regarding those who died following cesarean section, eclampsia was given as the cause of death, alone or in combination, in 165 cases, preëclamptic toxemia in forty-seven cases, and uremia in twenty-seven cases—or nearly 45 per cent of the total.

Sixty per cent of eclamptics were in convulsions or coma when first seen by a physician. Often the delivery was too radical, although in some instances of preëclampsia the management seems to have been too dilatory.

Puerperal hemorrhage accounted for 11 per cent of the deaths. Placenta prævia was frequently not treated properly. Often early bleeding was not heeded sufficiently by patient or physician. Too often the cervix was artificially dilated, followed by version and immediate extraction. In 408 cases in which patients died of placenta prævia there were only two Braxton-Hicks versions, only forty-one cesarean sections; only twenty-seven of the 408 patients were known to have had a blood transfusion. In only thirty-one cases the uterus was packed after delivery.

These and many other statements which could be quoted from this report will serve to emphasize the point that many of these patients might not have died had the usual accepted conservative methods of treatment been advised. One may ask, how does this apply to us in Minnesota? Minnesota was one of the fifteen states from which the figures comprising this report were selected.

Maternal deaths are due in large part to causes which can be controlled, although not entirely eliminated. An intensive effort to find means for lowering maternal and fetal mortality has been made by numerous medical and lay organizations, by the Children's Bureau of the United States Department of Labor, and by the Division of Child Hygiene of many of the state departments of health, among them that of Minnesota. Physicians have in most instances assumed leadership in acquainting the laity as well as the medical profession with the value of proper ma-

(Continued on page 557)

EDITORIAL

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BUSINESS MANAGER

J. R. BRUCE

Volume 20 AUGUST, 1937 Number 8

The Nasal Spray in the Prevention of Poliomyelitis

WITH the arrival of the poliomyelitis season physicians will be asked about preventive measures. Some parents will have heard about the use of a nasal spray of picric acid and alum which was given a rather extensive trial in Alabama, Tennessee and Mississippi during the epidemic in 1936. The results of that trial were accurately and fairly reported by Dr. Charles Armstrong in the February, 1937, number of the *American Public Health Journal*. The author's own conclusions indicate that the value of the method, as carried out, was not proven.

This much should be said, however, that in most cases the spraying was done at home by

parents. Some received as few as one spraying and for that reason the trial may not be conclusive.

The virus of poliomyelitis reaches the central nervous system through the olfactory nerve. In experiments upon monkeys with a great variety of nasal sprays the solution of picric acid and alum proved most effective in preventing infection with the virus. The application of the solution is supposed to render the nasal mucous membrane impervious to the entrance of the virus. Whether recommending spraying every other day for a week and then once a week can be expected to accomplish this result does seem open to question.

According to the report some 20 per cent of those who undertook the treatment had minor complaints of headache, nausea, or temporary nasal irritation. The only serious complication was the development of acute nephritis in two individuals following the spraying. Considering the fact that about a million individuals were concerned, these two serious complications scarcely contradict its use.

The report of the trial of this method of poliomyelitis prevention does not warrant its adoption as a general public health method. If used at all, it probably had better be administered by the physician and at more frequent intervals than was used at the reported trial. It is to be hoped that a better solution or a better technic or both may be found which will prove 100 per cent protective.

The Syphilis Problem

NO ONE knows better than the physician the tragic results of syphilis infection. The medical profession heartily approves the publicity campaign being sponsored by Surgeon-General Parran of the United States Public Health Service. An enemy in the open can be better attacked than one whose strength and characteristics are unknown.

We have rather exact information as to the prevalence of most contagious diseases. Our knowledge of the extent of venereal infection is much less exact, but we know from the Public

Health Reports that there are several hundred thousand cases of venereal disease in the country at any one time. For instance, the Public Health Service tabulated about 35,000 newly reported cases of syphilis in the country for May and some 15,000 new cases of gonorrhea. Undoubtedly the number of new cases considerably exceeds those reported, but these figures give some idea of the extent of the venereal problem.

There has been a most obvious change in the attitude of the public towards sex matters. This has been in many respects salutary in nature. By way of illustration, in William Dean Howells' novel "A Modern Instance," which appeared in the early eighties, so delicate is the reference to the arrival of Marcia's baby that the reader is almost taken unawares. In 1906 *The Ladies Home Journal* lost 75,000 subscribers following an attempt to discuss sex and venereal disease in its columns, although the diseases were not named. Today the best sellers are very sexy and often leave little to the imagination, which shows the trend of the public's demand.

At least the interest in sex matters has opened the way for the frank discussion of the serious problem presented by venereal diseases. The article by de Kruif and Parran entitled "We Can End This Sorrow," which appeared in the August number of *The Ladies Home Journal*, deals with the subject of syphilis and will probably not lose the magazine any subscriptions.

A generation or two ago children obtained their sex information from older playmates. While the same situation holds to some extent today, the modern parent is more likely to give what information is necessary and there are a few good books on the subject available for children. Incidentally, some of the books pretending to be scientific expositions on sex life are only pornographic in nature and should be prohibited.

Youth is entitled to know the facts of life and of the existence and seriousness of venereal disease. So impressed was a physician with the importance of his daughter's knowing of the consequences of venereal infection that he told her the essentials. Upon being questioned by his wife as to whether he called the diseases by name, he replied jocosely, no, that he had called gonorrhea lilies and syphilis, roses. Parents may as well call a spade a spade.

The relation of alcohol to venereal infection is not new but needs to be continually stressed.

Many a youngster under the influence of alcohol throws discretion to the winds, and one concerned with the prevalence of venereal disease cannot view with unconcern the widespread indulgence in alcohol by the youth of today.

The medical profession is sure to become involved in the present campaign against syphilis. *The Ladies Home Journal*, in the same August number, contains an editorial advocating legislation for compulsory Wassermann tests on pregnant women and as a prerequisite to obtaining a marriage license. Denmark has practically eliminated congenital syphilis by its regulations. This is a comparatively simple matter for the medical profession and if the public sees the need for such legislation the profession will coöperate. Syphilis in a pregnant woman, if detected early, is particularly amenable to treatment and the prevention of congenital syphilis is much more economic than the care of those born with the affliction.

In former generations the only way to attack syphilis was by its prevention largely through adherence to a strict moral code. Conventions were much more strict than today. This does not mean that morals have changed, for man was warned in the book of Proverbs against looking on wine when it is red and against lewd women. The fact, however, that syphilis can be cured and contagion prevented affords an added means of attack on the problem for which public information is essential.

CULTS AND THE BASIC SCIENCE LAW

Dr. J. F. DuBois, secretary of the Minnesota State Board of Medical Examiners, gives the following figures to show the workings of the basic science law since its passage in 1927:

"On April 12, 1927, there were 465 osteopaths registered. Since then forty have passed the examination, one has come in by reciprocity and eight by previous licensure. Yet in 1936 there were only 166 registered.

"On April 12, 1927, there were 592 chiropractors registered. Since then thirteen have passed the basic science examinations and three have registered by previous licensure. Yet in 1936 there were 410 registered.

"In 1928 there were 111 midwives registered. Six new licenses have been issued to date. Yet in 1936 only sixty-four were registered. There are no approved schools of midwifery in the United States. An applicant must pass a written and oral examination and must be vouched for by two reputable physicians."—*J. A. M. A.*, May 15, 1937.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

Aftermath

The Hon. J. Hamilton Lewis, United States Senator from Illinois, is an astute as well as a picturesque politician.

Out of the flowery verbiage with which he clothed what he clearly wished the doctors at Atlantic City to take as direct message from the Administration in Washington, members of the House of Delegates pieced together a proposal—backed by a philosophy of government in its relation to the individual—that struck no responsive chord.

Briefly it was this: Doctors must now consider themselves, so far as the needy are concerned, as officers of the federal government, responsible to the federal government for the welfare of its creations and instruments—its citizens.

Bowing to this interpretation of relationships, which Mr. Lewis assured the doctors was not of his choosing, the doctors must at once figure out a plan whereby they will be free to make out their own bills without intervention of an outside board, for service to the citizens and to assure collection of them from the federal government.

'Comrades'

The Senator bewailed the state of affairs that made it necessary for him to talk so to his comrades, the doctors. Sadly he pointed to a similar fate that has already overtaken the profession of law. Sadly he foresaw a system of federal licensing of physicians, the designation of "a certain class of doctors by the President or by some officers of the Federal government who then become a board who are to pass on their fellow doctors' having the right to be admitted to be a practitioner under the federal law."

The delegates listened courteously, passed no resolutions.

They were clearly united in their rejection of the senator's proposal and in their disbelief in the

inevitability of an authoritarian state in America in which citizens are the creatures of government.

Wisely they left the matter of answering Mr. Lewis, as they did the matter of passing upon the specific proposal made by the New York delegation, to the Board of Trustees to handle if and when interested officials apply to the American Medical Association for information, assistance and coöperation.

They Express Antagonism

An aftermath of individual resolutions deploring the regimentation of the medical profession outlined by Senator Lewis and expressing "complete antagonism" to any such development as the Senator sketched at Atlantic City has come from a number of widely separated state medical organizations.

These resolutions bear out the impression of those who were present at the historic Atlantic City session: that medicine will not trade its traditions and the fundamental philosophy upon which it has built a great usefulness and a great success, to trim with the political current of the moment.

What Every Doctor Should Know About the Narcotic Act

Many questions are being asked about some of the provisions of the new narcotic legislation, particularly those sections that apply especially to physicians.

The full text of the act was printed last month in these columns. Important provisions with respect to the conduct of physicians are briefly interpreted here, with a view to answering the most frequent questions.

Every member is urged, however, to read the full text of the bill in connection with this enumeration of salient points.

It will be noted that the new legislation includes a provision, long desired by federal enforcement officers, for prosecuting persons who obtain narcotics by fraud.

Narcotic Prescriptions

[Numbers used here do not correspond to section numbers used in the act. Most of the matter will be found, however, in Sections 5, 6, 7, 8, 9, and 18 of the Act.]

1. A physician in good faith and in the course of his professional practice may prescribe, administer and dispense narcotic drugs or cause them to be administered by a nurse or interne under his direction and supervision.

2. An apothecary in good faith may sell and dispense to any person upon a written prescription of a physician (and other qualified persons). The prescription *must be dated and signed by the person prescribing on the day when it is issued and it must bear the full name and address and registry number under the Federal Narcotic Laws of the person prescribing.*

3. The person filling the prescription must write the date of filling and his own signature on the face of the prescription. The prescription shall be retained on file by the proprietor of the pharmacy for a period of two years so as to be readily accessible for inspection to any public officer or employee engaged in the enforcement of the law.

4. The prescription may not be refilled.

5. In addition, the apothecary may, on official written order, sell to a physician (and others specifically named) in quantities not exceeding one ounce at any one time, aqueous or oleaginous solutions of which the content of narcotic drugs does not exceed a proportion greater than 20 per cent of the complete solution to be used for medicinal purposes.

Exemptions

6. The principal exemptions to the above general regulations, follow:

a. In cases where the prescribed preparation does not contain, in one fluid ounce or, if solid or semi-solid, in one avoirdupois ounce, more than two grains of opium or one quarter of a grain of morphine or any of its salts, or more than one grain of codeine or any of its salts or one-eighth grain of heroin or any of its salts, or more of any combination of the drugs than will exceed the pharmacological potency of the amounts named. The provisions outlined in 2, 3,

and 4 governing the writing, filling and filing of prescriptions, therefore, do not apply here.

b. The physician must make sure, however that he is not prescribing, administering or dispensing, under this exemption, more in any 48 consecutive hours, to any one person than four grains of opium, or half a grain of morphine or any of its salts or more than two grains of codeine or any of its salts, or a quarter grain of heroin or any of its salts. He must be sure, also that he does not supply any one person with more than one preparation thus exempted from the general requirements of the act, in any 48 consecutive hours.

c. No record needs to be kept of drugs administered in the amounts and under the conditions noted in the above exemptions.

In all other cases the physician must keep a record of drugs received by him and administered, dispensed or professionally used by him otherwise than by prescription; except that it will be sufficient for physicians using small amounts for local application to keep a record of the quantity, potency and character of such solutions and the dates when they are purchased or made up.

d. Any liniments, ointments or other medicinal preparations for external use only must contain, in addition to narcotic drugs, some drug or drugs conferring on them medical properties other than those possessed by the narcotic drug alone.

* * *

It is especially noted in the act that nothing in the law is to be construed as limiting the kind or quantity of any narcotic drug that may be prescribed, administered, dispensed or sold within the general provisions of the act.

* * *

Penalties are provided, as noted earlier, for persons who attempt to obtain narcotic drugs by subterfuge, fraud or deceit or who forge or falsify labels or prescriptions or who in any way misrepresent themselves.

* * *

No State License Required

Physicians are not required to secure licenses from the State Board of Health in order to prescribe or administer narcotic drugs. Only manufacturers and wholesalers must obtain such licenses.

They ARE required, as formerly, to comply

with all federal narcotic laws. Every physician must register under the Harrison Narcotic Act and keep his tax stamp on display in his office or place of business.

The new state legislation does not in any sense repeal or replace the federal law. Its provisions are designed to conform with it and the state Board of Health and local peace officers will cooperate with federal officers in enforcement.

Physicians In Dry Counties Please Note

Following is a very brief summary of provisions that apply to physicians in the new amendment to the Liquor Control Act. The complete text of this amendment is also printed in the July issue. *Please save the July issue for handy reference.*

1. Liquor prescriptions must be written entirely in ink.
2. They must state the name and address of the person for whom they are written, also the kind and quantity of liquor prescribed.
3. They must be signed by the physician in ink, bearing date of issuance and delivery.
4. No more than one quart of liquor may be sold on any one prescription.
5. No prescription shall be refilled more than once nor after the expiration of one month from the date of its issuance and delivery.
6. No physician shall prescribe, issue or deliver to any one person more than one prescription for intoxicating liquor within any period of ten days.

For further details read the amendment printed in the July issue of MINNESOTA MEDICINE.

Is Apology Necessary?

Monthly Editorial prepared by the Medical
Advisory Committee

Webster's Dictionary defines the verb to apologize as "to make excuse, to express regret or make amends for anything said or done on one's own behalf or that of another, to write a defense of, to defend."

In following cases lost and won in court, brought for alleged malpractice, your Medical Advisory Committee is struck by the apparent spirit of apology and the lack of poise and con-

fidence with which doctors on the stand are prone to give testimony in their own behalf.

A new experience, this, having their work brought out in the open and aired in open court; a jury to be faced, two or more lawyers to ask baffling and many times confounding questions, and a court room full of questioning friends and unfavorably-minded friends of the plaintiff—all in all, a trying situation. When, at length, the all-involving hypothetical question is shot at the defense medical witness and he is told to answer yes or no, it is no wonder that the spirit breaks and he wishes he had entered any profession but that of medicine.

Have we as a profession in Minnesota and members of our association anything to be apologetic about? We have not. Our type of work on the average is on a higher plane than that of most professions. If the lawyer who cross-examines one of us knew as much about medicine as the doctor on the stand, he would be practicing medicine and the doctor would be the interrogator. As a rule his knowledge is gained by a few minutes of study in a medical textbook, ours by years of experience in the care of human physical disaster. Do we need to apologize for this practical experience?

A few answers honestly given in simple words will satisfy the jury of our ability and sincerity in the case in question and go a long way toward satisfying the curiosity of the audience on the benches in the court room. A stiff back and upper lip pleases the judge. He is our friend, knows our discomfort and can be appealed to when in doubt as to our rights.

Remember: a man never fails until he fails in his own mind. Many friends have been made among the laity at a malpractice suit by the defendant's demeanor on the stand. Sell your ability to the jury by clean, clear, easily understandable testimony. You must have sold your skill to the patient in the beginning or he would not have employed you. Now sell yourself to the jury in the same way. Never apologize by word or behavior under fire. Keep your ideals before you. *Apologize never.*

False Affidavit

Carelessness in making affidavits for WPA workers has involved two Minnesota physicians in serious embarrassment and may mean their

removal from the roll of physicians regularly called upon for medical care of injured workers.

All members should take especial pains to avoid any suspicion of such falsification.

The affidavits are required in connection with a new federal ruling which allows WPA workers to make up time lost through sickness, provided the worker presents an affidavit showing sickness from his physician.

The physicians in question supplied affidavits to workmen who were known to have been absent from the job for other reasons. In one case it was a workhouse sentence, not sickness, that prevented the absentee from reporting to work.

Minnesota State Board of Medical Examiners

Two Minnesota Physicians Lose License

Re: David Hamilton Nusbaum, M.D.

Re: Walter Bertram Clement, M.D.

At the last regular meeting of the Minnesota State Board of Medical Examiners held on June 29, 1937, the Board revoked the license to practice medicine held by Dr. David Hamilton Nusbaum of Jackson, Minnesota, and Dr. Walter Bertram Clement of Shakopee, Minnesota.

Dr. Nusbaum's license was revoked because of his conviction in the District Court of the United States for the District of Minnesota, Fourth Division, on March 19, 1937, of a violation of the Harrison Narcotic Act. Dr. Nusbaum was sentenced in Court to pay a fine of \$1,000.00. The records of the Board show that Dr. Nusbaum was born at Ontario, Ohio, in 1856, graduating from Western Reserve in 1885, and being licensed in Minnesota in 1910, by reciprocity.

Dr. Clement was found guilty by the Board of "immoral, dishonorable and unprofessional" conduct following the death of a twenty-four year old Saint Paul girl on May 19, 1937. The records of the Board show that Dr. Clement was born in Florida in 1907. He graduated from the University of Colorado in 1934, and was licensed in Minnesota by reciprocity in 1935.

Self Styled Health Expert Loses in District Court

Re: State of Minnesota vs. Vivi Ann Wyntor, also known as Vivi Ann Mielke.

On July 12, 1937, the Honorable Richard D. O'Brien, Judge of the District Court, made an order overruling the demurrer interposed by the defendant in the above entitled case. Judge O'Brien has certified the legal question involved to the Supreme Court of Minnesota for a final decision. The defendant by demurring has admitted the facts alleged in the information, but contends that they do not constitute a violation of the laws of the State of Minnesota.

Mrs. Wyntor, who gave her age as twenty-four, and who stated she was a staff lecturer for Dr. R. A. Richardson, an osteopath of Kansas City, Missouri, was arrested on April 23, 1937, charged with practicing healing without a basic science certificate. Mrs. Wyntor

had been giving so-called health lectures at the Low Hotel in Saint Paul, which were advertised as being free, but at the conclusion of which she gave a so-called health course for which she made a charge of \$5.50. On the last day of her so-called health program an announcement was made that certain products could be purchased, and they were in fact recommended as being useful in the treatment of anemia, diabetes, female disorders, thyroid difficulties and a multitude of other conditions. She also was recommending for sale rectal dilators, and apparatus for colonic irrigation, the foregoing articles being sold at prices ranging from 75 cents to \$4.50. On being arraigned in Court Mrs. Wynter posted \$500.00 cash bail and later a bond in the same amount. Mrs. Wynter has operated at Duluth, Virginia, Hibbing and St. Cloud. She is represented by Senator George H. Lommen of Eveleth, Minnesota.

Negro Quack Wanted By Sheriff of Itasca County

Re: State of Minnesota vs. Ramon L. De Silvio.

On May 14, 1937, following an investigation by the Minnesota State Board of Medical Examiners, a warrant was issued for the arrest of Ramon L. De Silvio, a negro quack who operated on the Iron Range early in

1936. On May 2, 1936, De Silvio was sentenced by the Honorable Edward Freeman, Judge of the District Court, to a term of one year on the St. Louis County Work Farm. De Silvio served six months of the sentence and was released. Very shortly thereafter he returned to the swindling of sick people, falsely representing himself as a doctor, and as being able to cure people. He also swindled a number of Italian people living on the Iron Range in an attempt to raise \$700.00, which he claimed was to be used to obtain a license as a doctor. On May 17, 1937, he received \$55.00 in cash from John Ratman, an exact copy of De Silvio's representations being printed below.

Mar. 17, 1937

Received of John Ratman Fifty-five (\$55.00) dollars as payment for the cure for the purpose of obtaining botanical medicines.

This with the agreement that if he doesn't receive some benefit within two weeks time this money is to be refunded to above mentioned client.

(Signed) R. L. DE SILVIO,
Buhl Hotel,
Buhl, Minn.

Search was made for De Silvio throughout the Iron Range community and at Duluth and Superior, Wisconsin. Very splendid cooperation was received from Sheriff Elmer Madson, Grand Rapids, Minnesota, and from Mr. Oscar G. Olson, Chief of Police, at Duluth. It was also learned, through the Duluth Police Department, that De Silvio had been arrested at San Jose, California on June 29, 1932, charged with violating Section 17, being the California Medical Practice Act. At that time he stated he was born in Porto Rico and was a butcher by occupation.

The State Board of Medical Examiners respectfully requests that it be immediately notified by telephone or telegram if any information becomes available as to the whereabouts of De Silvio. He is wanted by Sheriff Elmer Madson, at Grand Rapids, Minnesota, on a warrant issued in the Ratman case. The address of the Minnesota State Board of Medical Examiners is 52 Lowry Medical Arts Bldg., Saint Paul; telephone Cedar 2064.

List of Physicians Licensed by the Minnesota State Board of Medical Examiners on June 29, 1937

By Examination

des, John Henry, U. of Minn., M.B., 1937, St. Paul, Minn.
eckjord, Philip Rains, U. of Minn., M.B. 1937, Minneapolis, Minn.
oraas, John Albert, U. of Minn., M.B. 1936, Ada, Minn.
atler, John Kenneth, U. of Minn., M.B. 1936, Duluth, Minn.
erry, James Henderson, Duke U., M.D. 1933, Park Rapids, Minn.
rigo, Felix Hughes, Duke U., M.D. 1935, Minneapolis, Minn.
onath, Douglas Harry, U. of So. Calif., M.D. 1936, Rochester, Minn.
rickson, Ralph Edward, U. of Minn., M.B. 1936, Minneapolis, Minn.
vans, Charles Albert, U. of Minn., M.B. 1936, Minneapolis, Minn.
rant, Russel, U. of Minn., M.B. 1937, Hackensack, N. J.
anson, Harry Albert, U. of Minn., M.B. 1937, Rochester, N. Y.
aury, Victor Givens, U. of Minn., M.B., M.D., 1935, Philadelphia, Pa.
eilman, Dorothy Margaret Henderson, Northwestern, M.B. 1931, M.D. 1932, Rochester, Minn.
ilger, Jerome Andrew, U. of Minn., M.B. 1936, St. Paul, Minn.
ilger, Laurence David, U. of Minn., M.B. 1936, St. Paul, Minn.
acek, James Lyman, U. of Minn., M.B. 1936, Minneapolis, Minn.
och, Ferdinand Leonard Philip, Johns Hopkins, M.D. 1933, Rochester, Minn.
indblom, Alton Edwin, U. of Minn., M.B. 1936, Minneapolis, Minn.
laun, Mark Emmett, Northwestern, M.B. 1936, M.D. 1937, St. Paul, Minn.
laves, Robert Arthur, U. of Minn., M.B. 1937, Minneapolis, Minn.

Moos, Daniel James, U. of Minn., M.B., 1937, Minneapolis, Minn.
Nelson, Kenneth L., U. of Minn., M.B. 1936, Willmar, Minn.
Nelson, Lloyd Joseph, U. of Minn., M.B., 1936, Minneapolis, Minn.
Nessa, Curtis Blaine, U. of Minn., M.B. 1936, St. Paul, Minn.
Olson, Duane Oliver Chas., U. of Minn., M.B. 1937, Minneapolis, Minn.
Potter, Robert B., U. of Minn., M.B. 1936, Hendricks, Minn.
Pumphrey, Robert Earl, Ohio State U., M.D. 1930, Rochester, Minn.
Rademaker, William, U. of Minn., M.B. 1935, M.D. 1936, Thief River Falls, Minn.
Schuele, David Thaddeus, U. of Wis., M.D. 1936, St. Paul, Minn.
Sinclair, James William, U. of Toronto, M.D. 1933, Kitchener, Ont., Can.
Sprafka, Ambrose Edward, U. of Minn., M.B. 1936, Chicago, Ill.
Walsh, Francis Mark, U. of Minn., M.B. 1937, Minneapolis, Minn.
Welton, Philip Charles, Marquette U., M.D. 1937, Duluth, Minn.
Yaffe, Henry Irvin, U. of Minn., M.B. 1934, M.D. 1936, Minneapolis, Minn.

By Reciprocity

Beech, Raymond Henry, Northwestern, M.D. 1933, Laona, Wis.
Dworak, Arthur Francis, Creighton U., M.D. 1930, Walker, Minn.
Northrop, Cedric, U. of Ore., M.D., 1936, Oak Terrace, Minn.
Sheedy, Leo Patrick, Geo. Wash. U., M.D. 1933, Rochester, Minn.

By National Board Credentials

Adams, John Milton, Columbia, M.D. 1933, Minneapolis, Minn.
Miller, Donald Frank, Northwestern, M.D. 1933, Williamsburg, Iowa
Patton, George DuBarry, Temple University, M.D. 1935, Rochester, Minn.
Uhley, Charles Gordon, U. of Minn., M.D. 1933, Minneapolis, Minn.

Mandelic Acid.—The Council authorized publication of a preliminary report which had been prepared for the Council by Dr. William F. Braasch, on mandelic acid. On the basis of this report the Council postponed consideration of mandelic acid to await further evidence concerning its usefulness and harmlessness. The discovery by Clark and Helmholz that ketonurine had bactericidal qualities paved the way for a number of therapeutic developments. Fuller found that the bactericidal element in ketonurine was beta-hydroxybutyric acid. It was found impossible to employ beta-hydroxybutyric acid by oral administration because it is largely oxidized into carbon dioxide and water before reaching the kidney. In the search for an organic acid of a similar nature that could be administered by mouth and excreted intact in the urine,

Rosenheim discovered that mandelic acid possessed these qualities. Since his report the drug has been further employed and is being put out by a number of manufacturers of pharmaceutical products. Dr. Braasch has made a thorough study of the subject. He concludes: It would appear that the oral administration of mandelic acid is followed by elimination of bacillary infection in the urinary tract in a large percentage of uncomplicated cases. There is no clinical evidence to indicate that it is a severe renal irritant in the presence of a normal renal function, provided it is not continued longer than two weeks. Its use is contraindicated when there is evidence of renal insufficiency because of the possibility of causing renal irritation and since it is usually not excreted in sufficient concentration to be bactericidal. (Journal American Medical Association, March 27, 1937, p. 1033.)

OF GENERAL INTEREST

Dr. T. R. Schweiger recently moved from Hibbing to Grand Rapids.

* * *

Dr. Harry A. Palmer has opened an office at Eveleth for the practice of medicine.

* * *

Dr. W. W. Yaeger of Ivanhoe has sold his practice to Dr. Alvin Erickson of Sanborn.

* * *

Dr. Harold L. Stemsrud has located in Parkers Prairie, where he will engage in medical practice.

* * *

Dr. F. E. Harrington has been appointed to membership on the Glen Lake Sanatorium commission.

* * *

Dr. S. A. Slater and Dr. W. P. Ross of Worthington conducted a free chest clinic at Pipestone on July 14.

* * *

Dr. Loren F. Wasson of Chisago City was recently married to Miss Helen F. Brohaugh of Minneapolis.

* * *

Dr. L. A. Smith, formerly of Watford City, North Dakota, has located at Balaton for the practice of medicine.

* * *

Dr. J. H. Drake of International Falls has been named surgeon for the Veterans of Foreign Wars of Minnesota.

* * *

Dr. and Mrs. Ralph T. Knight, who have resided in Rochester for several months, have now returned to Minneapolis.

* * *

Dr. J. A. Du Bois and Dr. R. B. Kettlewell have recently formed a partnership for medical practice in Sauk Center.

* * *

Dr. E. E. Christensen, who has been engaged in private practice in Winona, has become affiliated with the Winona Clinic.

* * *

Mrs. Anna M. Higbee, widow of the late Dr. Albert E. Higbee, and mother of Dr. Paul A. Higbee, died on July 15 in Minneapolis.

* * *

Dr. G. H. Purves, formerly of Russell, Minnesota, has taken over the practice of Dr. P. J. Bursheim at Lake Benton, Minnesota.

* * *

Dr. and Mrs. S. C. Schmitt of Minneapolis have sold their home and expect to move to California in September to make their home.

Dr. Charles G. Uhley of Minneapolis has become associated with the Northwestern Clinic at Crookston in the department of surgery.

* * *

Dr. Stanley B. Peters of Rochester, N. Y., obstetrician and gynecologist, has become associated with the Lenont-Peterson Clinic at Virginia.

* * *

Dr. E. T. Keller, who has practiced medicine at Leola, South Dakota, since last September, has now located at Hibbing, where he will continue his practice.

* * *

Dr. Archie M. Smith has opened offices for the practice of medicine at Hopkins. He was formerly associated with the Bratrud Clinic at Thief River Falls.

* * *

Dr. Neil T. Norris, of Minneapolis, has become associated with Dr. G. B. Belote at Caledonia. Dr. Norris was recently married to Miss Miriam Rapp of Norwood.

* * *

Dr. James S. Spang, formerly of Duluth, has gone to Chicago, where he will be associated with Dr. Carl A. Meyer as resident surgeon at the New Henriette Hospital.

* * *

Dr. A. B. Sweet of Hopkins, the only surviving Civil War veteran of that city, was honored by his neighbors and friends in a quiet celebration on his ninetieth birthday on July 14.

* * *

Dr. Raymond W. Dowidat has located in Cologne for the practice of medicine. He will be associated with Dr. D. T. Ormond of Waconia, and will assist him part of the time.

* * *

Dr. Kasper P. Caveny of White Bear was recently married to Miss Edna Mae Pedersen of Le Sueur. Dr. Caveny has gone to Elkton, South Dakota, where he will practice medicine.

* * *

Dr. Ralph Erickson, who recently completed his hospital training at Trinity Lutheran Hospital at Minot, North Dakota, is now associated with Dr. W. C. Bernstein of New Richland.

* * *

Dr. John Paulson, a University of Minnesota medical school graduate who has completed internship at Swedish hospital, Minneapolis, will practice in Rochester, and has opened offices in the Lawler building.

* * *

Dr. Frank C. Rodda of Minneapolis, Dr. H. E. Robertson of Rochester, and Dr. E. M. Hammes of Saint Paul delivered addresses to the members of the Montana State Medical Association at their annual meeting in July.

Dr. A. Erickson recently sold his practice at Sanborn to Dr. Robert J. Cairns, formerly of Burlington, Wisconsin. Dr. Erickson has purchased the practice of Dr. W. W. Yaeger at Ivanhoe, where he established offices August 1.

* * *

Dr. Russell Spittler of Waseca has become associated in the practice of medicine and surgery with Dr. G. A. Windsor of Livingston, Montana. Dr. Spittler has been with the United States Army Medical Corps for the past several years.

* * *

Dr. Arthur A. Zierold of Minneapolis has been elected to membership in the American Surgical Association. Dr. Owen Wangenstein is the only other Minneapolis member of this Association, whose membership is limited to 150.

* * *

Dr. Leo G. Rigler of Minneapolis delivered the principal address at the annual convention of the American Society of X-Ray Technicians at Denver in July. He spoke on "The History of the American Registry of Radiological Technicians."

* * *

Dr. J. E. Schroepel of New Ulm has purchased the practice of Dr. W. B. Kaufman of Winthrop. Dr. Kaufman is taking up advanced study at the Baltimore Eye and Ear Hospital and expects to locate in New Ulm after completing his study in Baltimore.

* * *

Dr. Orville N. Nelson, formerly of Battle Lake, was married on June 30 to Miss Jane Sherwood, of Kimball. Dr. Nelson is an eye and ear specialist on the staff of the U. S. Veterans Hospital at Bay Pines, Florida. He is a graduate of the University of Minnesota.

* * *

Dr. C. M. Dovre, Saint Paul, sailed for Europe the latter part of June, for an extended tour of Europe. Dr. Dovre will take up postgraduate work in surgery in Vienna and Germany, and will later visit relatives in Norway and Sweden before returning to his practice in Saint Paul.

* * *

Yale University is the recipient of \$10,000,000 to be known as the Jane Coffin Child's Memorial Fund for Scientific Research to be used primarily for medical research into the cause of cancer. When this aim is achieved the fund is to be devoted to other unsolved medical problems.

* * *

Dr. Waltman Walters of Rochester received an honorary degree of Doctor of Science from Dartmouth at the 160th commencement exercises of the college, June 14. Dr. Walters graduated from Dartmouth in 1917 and received his M.D. from Rush Medical College. The honorary degree is in recognition of his attainments as a scientist and scholar in noteworthy research and because of his valued administrative capabilities as a member of the Board of Governors of the Mayo Clinic.

HOSPITAL NOTES

Miss Edith Kamrath, of Minneapolis, formerly of New Ulm, is the new superintendent of the Community Hospital at Hutchinson. Miss Kamrath was superintendent of the Union Hospital at New Ulm for six years.

* * *

Miss Esther Wolfe, former superintendent of the Community Hospital at Hutchinson, has taken over the superintendency of St. Andrews Hospital in Minneapolis. She is the second vice president of the Minnesota State Hospital Association.

* * *

Miss Zena Peterson, formerly assistant superintendent of nurses at Duke University Hospital, Durham, North Carolina, has been named superintendent of nurses at Swedish Hospital. She is a graduate of the University of Minnesota. She succeeds Miss Hannah Berggren, who has become assistant superintendent of nurses at General Hospital.

* * *

The former internes of Northwestern Hospital returned to Minneapolis on June 19 for their annual homecoming. The 150 doctors attending the reunion were guests at an informal luncheon and reception at the hospital, following which they enjoyed a picnic and boat cruise up the Minnesota and Mississippi Rivers. Dr. A. E. Benjamin and Dr. W. A. Hanson were in charge of the arrangements.

* * *

Dr. R. L. Burns, of Two Harbors, has sold his interest in the Burns and Christiansen Hospital to Dr. E. E. Webber, of Duluth. Dr. Burns left with his family for California, where he plans to rest for a year and then take a world cruise.

The hospital will be continued under the name Two Harbors Clinic and Hospital, and a larger staff of doctors will be employed.

Plans are under consideration for alterations to the building, and the addition of new equipment.

Dr. John J. Rouse, formerly on the staff of Madison General Hospital, Madison, Wisconsin, has joined the staff of the hospital.

The first newspaper publisher in America was Benjamin Harris. Only one issue of his publication appeared. "Public Occurrences" was dated September 25, 1690, Boston. It was suppressed by Governor Bradstreet because of "reflexions" distasteful to him. Such examples as this made it important, later, that the Constitution of the United States should guarantee free speech to the citizens, in a way not to be changed (in theory at least) except by the will of the people expressed in amendment by the regular course of referring to state legislatures, or by action of a constitutional convention.

—Public Relations Committee, Medical Society of the State of New York.

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR AUGUST

The Minnesota State Medical Association Morning Health Service.

The Minnesota State Medical Association broadcasts weekly at 9:45 o'clock every Saturday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

SPEAKER: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

August 7—Pre-school Examinations.

August 14—Coronary Occlusion.

August 21—Sore Throat.

August 28—Dental Anesthesia.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next written examination and review of case histories of Group B applicants by the American Board of Obstetrics and Gynecology will be held in various cities in the United States and Canada on Saturday, November 6, 1937.

The next general examination for all candidates (Groups A and B) will be held in San Francisco, California, on June 13 and 14, 1938, immediately prior to the American Medical Association meeting.

Application blanks and booklets of information may be obtained from Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania. Applications for these examinations must be filed in the Secretary's office not later than sixty days prior to the scheduled dates of examination.

THE AMERICAN COLLEGE OF PHYSICIANS

The Twenty-second Annual Session of the American College of Physicians will be held in New York City, with headquarters at the Waldorf-Astoria Hotel, April 4-8, 1938.

Dr. James H. Means, of Boston, is President of the College, and will have charge of the program of general scientific sessions. Dr. James Alex Miller, of New York City, has been appointed General Chairman of the Session, and will be in charge of the program of clinics and demonstrations in the hospitals and medical schools and of the program of Round Table Discussions to be conducted at headquarters.

REDWOOD-BROWN COUNTY SOCIETY

At the annual meeting of the Redwood-Brown County Medical Society held at New Ulm in May, Dr. Rolf Hovde, of Winthrop, was elected president. Dr. C. F. Gibbons, of Comfrey, was elected vice president, and Dr. Carl Fritsche, of New Ulm, was elected secretary-treasurer.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Northern Minnesota Medical Association will be held at Virginia, Minnesota, August 27 and 28. Dr. O. O. Larsen, Detroit Lakes, is president of the Association this year, Dr. E. A. Heiberg, Fergus Falls, is vice president, and Dr. J. F. Norman, Crookston, is secretary-treasurer. The following scientific program has been arranged by Dr. A. N. Collins of Duluth:

The Menopause Syndrome. L. F. HAWKINSON, Brainerd.

Bronchoscopy as an Aid to the General Practitioner. H. D. HARLOWE, Virginia.

X-ray Therapy in Non-Malignant Conditions. GAG CLEMENT, Duluth.

Heart (Movie). FRANK HIRSCHBOECK, Duluth.

Gastro-Intestinal Allergy. C. I. KRANTZ, Duluth.

The Comparative Values of Injection and Surgical Treatment of Herniæ. GEORGE EARL, St. Paul.

Insulin Shock Therapy in Schizophrenia. (Dementia Precox). J. C. MICHAEL, Minneapolis.

Conditions Causing Intestinal Obstruction and their Management. J. A. BARGEN, Rochester.

Certain Considerations of the Faucial Tonsil in General Practice. H. J. LILLIE, Rochester.

Essential Hypertension; the Indications For and the Results of Extensive Sympathectomy. A. W. ADSON, Rochester.

Rating of Disabilities. ROBERT M. BURNS, Saint Paul. Director Bureau of Medical Economics, American Medical Association. R. G. LELAND, Chicago.

Medicine A Coöperative Business, A Non-Competitive Profession. B. J. BRANTON, Willmar.

The Physician and the Workman's Compensation Law. HON. N. H. DEBEL, Saint Paul Industrial Commission.

The Medical Witness. PHILIP C. REYNOLDS, Minneapolis. Discussion, JOHN J. FEE, Duluth.

On August 27, the banquet will be held with Dr. Frank J. Hirschboeck again acting as toastmaster. The program is as follows:

Toastmaster—FRANK J. HIRSCHBOECK, M.D., Duluth.

Address—The Wonderland of Lake Superior, J. A. MERRILL, Ph.D., President Emeritus, State Teacher College, Superior, Wisconsin.

The Business Side of Medicine—R. G. LELAND, M.D., Chicago, Director of Bureau of Medical Economics American Medical Association.

The State Medical Association; A Going Concern—A. W. ADSON, M.D., Rochester, President, Minnesota State Medical Association.

President's Address—O. O. LARSEN, M.D., Detroit Lakes.

Visiting ladies will be entertained by the Auxiliary members of the Virginia and St. Louis County Societies. An interesting and enjoyable meeting is assured.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

Annual Meeting
Winona, Minnesota
Winona High School Auditorium
August 11, 1937

Officers

President, Dr. H. C. Habein, Rochester
First Vice President, Dr. W. A. Merritt, Albert Lea
Second Vice President, Dr. D. E. Morehead, Owatonna
Secretary-Treasurer, Dr. N. W. Barker, Rochester

Announcements

The morning session will be held in the Auditorium of the Winona High School, beginning promptly at 9:00 A. M.

The business meeting and afternoon session will be held aboard the steamboat "Capitol," which will leave the dock at 12:30 sharp. Luncheon will be served aboard the boat. The boat will dock at 5:30.

The banquet is to be held at the Winona Country Club at 6:30. The ladies are invited to attend the evening banquet.

Program

Morning Meeting

"The accurate diagnosis of appendicitis," Dr. L. I. Younger, Winona.
"Compression fractures of the spine," Dr. W. W. Nauth and Dr. P. A. Mattison, Winona.
"The importance of the lever at the top of the femur as a stabilizing influence and its restoration," Dr. F. H. Albee, New York City.
"New concepts in the diagnosis and treatment of vesical neck pathology," Dr. John Emmett, Rochester.
"Injection treatment of hernia," Dr. James Morrow, Austin.
"Acute lymphocytic meningitis," Dr. E. M. Hammes, St. Paul.
"The use of protamine insulin," Dr. R. M. Wilder, Rochester.

Afternoon Meeting

Aboard the Steamboat "Capitol"

Business Meeting

Case Reports

"Pathogenesis and treatment of valvular heart disease," Dr. Moses Barron, Minneapolis
"The use of sulfanilamide (prontylin)," Drs. A. E. Brown, E. G. Bannick and H. C. Habein, Rochester.
"Review of the hypoglycemic treatment of mental disease," Dr. F. P. Moersch, Rochester.

Evening Session

6:30

Banquet—Winona Country Club

Medical Trends—Dr. A. W. Adson, Rochester

Informal Remarks—Dr. W. J. Mayo, Rochester

Presidential Address—Dr. H. C. Habein, Rochester.

EAST CENTRAL MINNESOTA

The East Central Minnesota Medical Society met at the Pokegama Sanatorium May 11, 1937. Dr. H. L. Stemsrud of Pine City and Dr. L. F. Wasson of Chicago City were elected to membership in the Society. Dinner was served and a scientific program was presented in the evening by guest speakers. Dr. C. G. Arvidson of Minneapolis gave an address on "Syphilis," Dr. John Meade of St. Paul spoke on "Protamine Insulin in Diabetic Patients" and Dr. L. F. Hawkinson of Brainerd discussed the "Modern Treatment of the Menopause."

At the invitation of the Woman's Auxiliary, on June 22, 1937, the East Central Minnesota Medical Society had a picnic at the summer home of Dr. and Mrs. F. F. Callahan.

OLMSTED-HOUSTON-FILLMORE-DODGE COUNTY SOCIETY

A travelogue of his trip to Europe, illustrated with colored pictures, by Dr. Howard K. Gray was a feature of the annual summer meeting of the Olmsted-Houston-Fillmore-Dodge County Medical society together with the auxiliary at the Rochester Golf and Country club, Thursday evening, July 15.

Covers were placed for approximately 290 at the dinner for which Dr. C. F. Dixon, president of the medical society, and Mrs. L. M. Randall, auxiliary president, were general chairmen. The Program Committee consisted of Dr. S. F. Haines, Dr. Gray and Dr. M. J. Anderson.

Twenty-four new members were elected to the society.

MEDICAL ASSOCIATION OF MONTANA

At the annual meeting of the Medical Association of Montana, held in Great Falls, Tuesday and Wednesday, July 13 and 14, the keynote of the meeting was struck in the presidential address by Dr. John A. Evert of Glendive, who spoke on "American Standards of Practice."

Papers presented on the scientific program included the following:

"Treatment of Uterine Myomas"—HENRY SCHMITZ, Chicago, Ill.

"Conservative Renal Surgery"—RONALD G. SCHERER, Bozeman, Mont.

"Fractures of Os Calcis"—R. B. RICHARDSON, Great Falls, Mont.

"Fluid Intake in Edematous Patients"—F. R. SCHEMM, Great Falls, Mont.

"Paralysis of the Peripheral Nerves of the Upper Extremity"—J. K. COLMAN, Butte, Mont.

"Massive Purulent Pericarditis"—FRED F. ATTIX, Lewistown, Mont.

"Heart Disease in Middle Life"—J. H. J. UPHAM, President of the American Medical Association, Columbus, Ohio.

"Psychosis Associated with the Involutional Period"—ERNEST M. HAMMES, Saint Paul, Minn.

"Cancer and Its Treatment with Radium"—H. H. JAMES, Butte, Mont.

"Nephritis in Children"—JESSIE M. BIERMAN, Helena, Mont.

At the banquet held Wednesday evening guests were addressed by Dr. J. H. J. Upham, president of the American Medical Association, on "Changing Times in Medicine." Dr. A. J. Carlson of Chicago spoke on "Black Oxen and Togenburg Goats."

House of Delegates Proceedings

At the meeting of the House of Delegates a committee was appointed to revise the Constitution. Hon. E. G. Toomey of Helena was authorized to be employed as counsel of the Association. The Committee on Insurance reported a reduction in the number of malpractice suits from forty-six to fifteen in the past year. The proposed annual registration law was referred to the Legislative Committee for study before action can be taken. A new committee is to be appointed to correlate Social Security activities with those of the Association. Mrs. Augustus S. Kech of Altoona, Pennsylvania, addressed the Delegates on the advisability of forming a Women's Auxiliary and wives of members were authorized to proceed with such an organization. The North Central Medical Society was granted a new charter. All counties in the State are now in organized societies.

Officers elected for the coming year are: W. P. Smith, Columbus, president; J. C. MacGregor, Great Falls, president-elect; E. D. Hitchcock, Great Falls, vice president; T. L. Hawkins, Helena, secretary-treasurer; J. H. Irwin, Great Falls, delegate; E. M. Gans, Harlowton, alternate.

The next meeting of the Association will be held in Lewistown, the date to be decided later.

Pacific Northwest Association Convenes

Immediately following the meeting of the Montana Association the Pacific Northwest Medical Association held a three-day meeting at which the following were guest speakers: A. J. Carlson, Chicago; Virgil S. Counsellor, Rochester, Minn.; Norman F. Miller, Ann Arbor, Mich.; H. E. Robertson, Rochester, Minn.; L. H. Newburgh, Ann Arbor, Mich.; F. C. Rodda, Minneapolis, Minn.; J. H. J. Upham, Columbus, Ohio; E. M. Hammes, Saint Paul, Minn.

Emerson Suction Pressure Apparatus

This apparatus is recommended by the firm for the treatment of peripheral vascular diseases of the extremities by alternating positive and negative pressure. Essentially, the apparatus consists of an air compressor and vacuum pump, a "boot" or chamber in which the patient's limb is confined. The types of cases benefited by this type of apparatus appear to be acute vascular occlusion, frost-bite, and vascular diseases with major involvement of the large vessels. The contra-indications appear to be thrombophlebitis, cellulitis or lymphangitis (acute or subacute), extensive destruction of the arteriolar or capillary vessels, advanced thromboangiitis obliterans with capillary stasis, and advanced arteriolar sclerosis with capillary stasis and venous thrombosis. J. H. Emerson, Cambridge, Mass. (A. M. A. accepted.)

In Memoriam

Charles W. Bray

1868-1937

Death came suddenly to Dr. Charles W. Bray of Biwabik on July 8, 1937, while attending a patient. He was born on September 7, 1868, at Young America. His preliminary education was received in the schools at Excelsior, Minnesota. He entered the University of Minnesota and received his B.A. degree in 1891 and his M.D. in 1895. The following year he took his internship in the City and County Hospital in St. Paul which is now called Ancker Hospital. Following this he practiced medicine in Wabasha for one year, and in Minneapolis and Anoka, each for a part of a year. January 6, 1899, he located at Biwabik, purchasing the Biwabik Hospital from Dr. Ralph Sewall, a medical classmate. In 1899 he married Miss Mary Elizabeth Bassett, of Hastings, a graduate of the University of Minnesota in Academic 1892, and Medic 1895. Five children were born to them, of whom four are living: Robert B. Bray, who is practicing medicine in Fargo, North Dakota; Elizabeth, teaching business and commercial at South High School in Minneapolis; Phillip, practicing medicine in Duluth; and Kenneth, also practicing medicine at Park Rapids.

Dr. Bray was active in church, fraternal, and public affairs. For many years he was president of the School Board. He was a member of the County Child Welfare Board until its recent absorption by the County Poor Commission, and a member of St. Louis County Tuberculosis Association for many years, being president for one year. He had been Vice President of the State Medical Association, and was the second president of the Range Medical Association.

Charles W. Bray was a real man; firm in his convictions, nevertheless tolerant of the opinions of others; always genial and good natured. He was a man to whom those in trouble and distress could turn for aid; dependable and reliable and endowed with good judgment. He was a most valuable citizen to his town and carried out the duties of the offices to which he was elected honestly and efficiently. His splendid sense of humor made him a delightful companion, and he was so genuine and sympathetic that his friendships grew stronger each year. As a physician he was kind and sympathetic, always dependable and conscientious, courageous but never reckless, and endowed with fine judgment which rendered his broad education useful to its highest degree. In friendships, in the memory of good deeds kindly done, in the esteem and love in which he was held by his fellow townsmen, his friends of medical fraternity, and, above all, in the veneration and love of his patients he was rich beyond comparison. He was one of God's noblemen.

Meeting of May 6, 1937

ATE RESULTS IN A FRACTURED PATELLA TOGETHER WITH OBSERVATIONS ON THE OPERATIVE TREATMENT OF FRACTURES OF THE PATELLA

KENNETH BULKLEY, M.D.

Until I recently looked into the matter I was under the general impression that the majority of fractures of the patella of the transverse or indirect type (the only type to which we refer tonight) resulted in fibrous union and, as a matter of fact, only a short time ago in talking to Dr. Archibald Wilcox of this city regarding the matter he expressed it to me, as his opinion, that practically all of these cases ended in fibrous union. In looking over some of our standard textbooks on the matter, however, I find that different views are expressed. Campbell in his "Textbook of Orthopedic Surgery" states "fibrous union which is not incompatible with good function is said to be frequent." Speed in his "Fractures and Dislocations" states that "fibrous

The method which I was taught by Dr. Blake and which I have always followed, and a description of which he published in the *Journal of the American Medical Association* Oct. 1, 1904, is to my mind as efficient a procedure as there is, subjects the joint to less trauma and exposure than any other, and can be carried out with great rapidity. It is the procedure which I carried out on the case on which I wish to report tonight. It consists essentially in a curved transverse incision, convexed downward, complete exposure of the fracture line together with the tears in the lateral expansion, trimming or imbricating the loose bits of fibrous tissue which invariably lie over the exposed fractured ends and then irrigating the entire joint with large quantities of sterile saline until the joint is free from all blood clots. Sponging of the joint surfaces should be avoided. Thereafter a heavy No. 4 chromic catgut or kangaroo suture is placed deeply along each lateral aspect of each fragment, the two sutures being tied simultaneously in order to obtain accurate bony apposition. Thereafter the tears in the lateral expansions are carefully sutured with fine chromic cat-

gut and the skin wound loosely closed with interrupted sutures. The leg is then placed in a posterior molded splint and the usual after-care carried out, stress being laid upon early passive lateral motion of the patella.

THE SELECTION OF DOSAGE AND TECHNIC IN SPINAL ANESTHESIA

RALPH KNIGHT, M.D.

Few procedures in medicine have been subject to as wide a variety of opinions and practice as has spinal anesthesia. In any regional anesthesia a suitable concentration of anesthetic drug must be placed in contact with the nerve trunk. In types other than spinal, the surrounding tissues help to keep the solution in place in practically the same concentration in which it leaves the syringe. In spinal anesthesia the solution is discharged into a liquid medium in which it is immediately distributed, mixed, diffused and diluted. In the attempt to control these actions and in spite of them to bring the most suitable concentration of drug into contact with the spinal nerve roots to be anesthetized, a wide variety of technics have been advocated.

Some have drained away spinal fluid. Some have conserved all spinal fluid and added the solution to it. Some have dissolved the drug in spinal fluid and endeavored not to change the volume at all. Some have aided the mixture and diffusion by barbotage. Some have made solutions lighter and some heavier than spinal fluid and have attempted to minimize the mixing and diffusion, but to allow the solution to flow to the desired level in the dural canal by adjusting the posture of the patient. Some have advocated injecting the solution always through the same vertebral interspace, while others have advocated varying the interspace rather widely according to the area desired to be most intensely anesthetized.

Spinal anesthesia blocks the white rami between the sympathetics and the spinal cord and lowers the blood pressure. Therefore, in addition to the introduction and manipulation of the anesthetic solution itself, the use of circulatory and vasomotor stimulants has been the subject of a great deal of argument. Some have insisted that the fall of blood pressure during spinal anesthesia is of no consequence and that it is even inadvisable to read it. Some advocate the prophylactic intramuscular injection of a suitable dose of a pressor drug 10, 15 or 20 minutes before the intradural injection of the anesthetic. Some advocate this immediately before and some immediately after the spinal injection. What is considered a suitable prophylactic dose varies from 25 mg. to 100 mg. of ephedrine. When the blood pressure falls, some give more ephedrine intramuscularly or intravenously; others insist it has no beneficial effect whatever.

In spite of this lack of standardization, spinal anesthesia has become a widely used procedure, because of its evident advantages and because its principal maneuver, the introduction of the spinal needle, is relatively easy to accomplish.

Accidents have occurred, usually because some admittedly advocated technic has been employed without

complete coordination of certain factors and judgments involved in that technic. Spinal anesthesia has therefore been entirely condemned by some, but by some others it has been used with too much enthusiasm and too little discrimination. It is such a valuable aid to surgery that its use in appropriate cases will undoubtedly increase as skill in its administration increases, while its ill-advised use will undoubtedly decrease.

In all of the variations mentioned above, two general methods are apparent: (1) the gravity method, and (2) the mixing and diffusion method. They are both workable and have been used with good results. One must not be too strong an advocate of one method. In reading descriptions of various technics, one must realize too that it has been impossible for the author to adequately present his variations in judgments for different patients. One is apt to gain the impression that his procedure is practically alike for everyone. Such questions as these are often asked: "How much do you give for a gallbladder?" "How much for a hernia?" There is, of course, no answer to such questions.

The factors to be considered are: the present blood pressure and whether it is approximately the patient's usual normal or represents a change due to illness; the location of the operation, its duration, and the profundness of relaxation required; the patient's weight, length of body, and, above all, the age, vigor, nutrition and hemoglobin.

The gravity method and its variations offer very interesting possibilities. It should not be used without due consideration of all of the above factors. For lack of time, only the diffusion method will be considered in more detail.

A solution is used whose specific gravity approximates that of spinal fluid. Procaine crystals dissolved in spinal fluid is only a little heavier and may be used well by this method, although its spread may be influenced somewhat by gravity. A 10 per cent solution of procaine in water is practically isobaric and is a very convenient and satisfactory preparation. The dose is measured in the syringe and is then diluted with spinal fluid to the desired dilution and volume. For inguinal, perineal, hip and lower extremity operations except upon the knee, the space between the third and fourth lumbar vertebrae is usually used. For very long operations it is well to use a larger, more concentrated dose and deposit it between the fourth and fifth lumbar; for lower abdominal operations the space between second and third lumbar, for upper abdominal surgery between the first and second lumbar. For high stomach operations in tall individuals the space between twelfth dorsal and the first lumbar is sometimes best. In the higher spaces the concentration in the syringe should be kept down to 3 per cent to avoid too profound effect upon the intercostals, but the volume should be as large as possible to avoid too great an immediate diffusion. In the space between the second and third lumbar 4 per cent is ordinarily a good concentration and in the lower spaces 5 or even 6 per cent may often be used. With higher than 6 per cent solution there is the possibility of permanent damage to the spinal nerve roots.

cord. Too high concentration has probably been the cause of damage more often than injury by the middle. The amount of solution will vary from 2 or 3 c.c. to 5 or 6 c.c., according to the dilution used and the length of anesthesia sought.

Before the injection, ephedrine should be injected intramuscularly. Twenty-five mg. should be thought of as the usual dose. If the pressure has fallen because of loss, or if it is unusually low, the dose should be increased to 30, 40 or 50 mg. If the pressure is unusually high, the ephedrine injection should be delayed until a successful spinal puncture has been made, then one of the larger doses should be given, or, better still, part of the dose should be kept ready in the syringe to give intravenously without delay if the pressure starts to fall. Arteriosclerotic individuals are not the best risks for spinal anesthesia, but neither are they for other procedures, and their pressures should be kept up, but not boosted above the usual. Other hypertensives and normals do well with a 30 or 40 mm. fall in the anesthesia is that much better.

The mixing of the spinal anesthetic with spinal fluid and barbotage is no longer considered a good maneuver. The injection is made at a given rate and should be a constant factor, one-half c.c. per second being a good rate.

Having arrived at a tentative concentration and volume of solution for a given case, one has found the tentative total dose which he would like to give. It is then that he must carefully check this with his estimation of the patient's susceptibility and risk as represented by his size, age, vigor, nutrition and hemoglobin. Local anesthetics in the spinal fluid have a more profound effect upon the system in general, and the central nervous in particular, than when they are deposited in other tissues. Age and debility, and even smallness of size, influence one to cut down the dose and concentration. It is often feasible to give what would seem to be an extremely small dose, and at least partially make up for this in effect by placing it one space higher than at first contemplated. In very vigorous individuals the dose may be considerably increased, and if very long anesthesia is needed, a smaller volume of more concentrated solution may be placed one space higher or a larger total dose may be placed in the same or a lower space.

There is no rule of thumb, but the above indicates the factors and lines of judgment that must come into play in each case. It is workable enough so that a group of people accustomed to working together will estimate independently almost exactly the same dose, volume, concentration and placement for each case.

Finally, I want to emphasize the fact that spinal anesthetic doses should always be conservative and one should never feel humiliated or defeated if the anesthesia needs to be supplemented by inhalation or infiltration. For upper abdominal operations it is often a very great advantage to administer a very conservative dose of spinal anesthetic and then proceed with inhalation in the usual way. Gas without ether is then usually efficient. However, if indications are such that inhalation anesthesia should be avoided, one should not hesi-

tate to give a very full and effective spinal dose.

One must always, of course, be prepared to use helpful measures, such as lowering the head, ephedrine intravenously, carbon dioxide and oxygen, and even artificial lung ventilation with oxygen by bag pressure. These measures are very effective and are capable of carrying a patient along very well even in the presence of an overdose.

Nausea cannot always be prevented. If due to systemic effect of the procaine or to fall in blood pressure, lowering the head, carbon dioxide and oxygen and ephedrine will usually remedy it. If due to visceral traction stimulating afferent paths in the vagus, a light gas anesthesia is necessary.

Procaine is still the drug of choice. For very long anesthesia a little pontocaine may be substituted for part or all of the procaine. Metycaine is a very promising drug. It is about 20 or 25 per cent more potent and longer lasting than procaine, and seems to present no more unfavorable or annoying reactions. It probably will tend to come more into use.

Failure to obtain anesthesia is due to failure to deposit the anesthetic squarely and entirely within the subarachnoid space. The solution should not be injected unless spinal fluid not only drips freely, but also aspirates freely and rapidly.

Peridural anesthesia is a cousin of spinal anesthesia which is certain to come into wide use as soon as its technic is more generally learned. A larger amount of solution is injected into the peridural space between the dura and the ligamentum flavum. About 30 c.c. of 2 or 2.5 per cent procaine solution is injected. A zone of anesthesia about ten spinal segments wide is created and the solution is usually injected at about the center of the desired zone. This method does not entail the hazards usually thought of in connection with spinal anesthesia. The solution can not rise to the medullary area. There are no post-anesthesia headaches.

Following the scientific program, Dr. Ivar Sivertsen, M.D., C.M., F.A.C.S., president of the Minneapolis Surgical Society, read the presidential address.

IS CANCER PREVENTABLE?

IVAR SIVERTSEN, M.D.

Cancer is a curable disease. Surgical and radiological treatment have proven valuable in a large percentage of cases. Records show that cures may be obtained, with patients living and well for twenty to thirty years after treatment.

Why all cases of cancer are not cured may be explained in various ways. First, we do not know what is the cause of cancer; that it is a disease of the degeneration of normal tissues no one disputes. We know that as degeneration takes place, injury or irritation, in a patient whose body fluids or soil are suitable, permits tissue repair to regenerate in a manner which is abnormal and forms a new growth which we designate as cancer.

If we consider the human body from a physiological

standpoint it would seem that there could be no cancer nor other chronic disease if our bodies were kept normal or physiologically healthy. Degeneration is most rapid in inactive parts or organs of our bodies. If we prevent degeneration from taking place by attending to our normal functions and follow a few simple rules of life would it not be plausible that a decrease in the incidence of chronic disease and cancer should follow? There is no doubt that the increase in cancer incidence in the past generation is in direct proportion to the increase in the use of machinery and mechanical devices. Inasmuch as our muscular system represents about 43 per cent of our body weight, and because of deficient function as a result of machines and mechanical devices, this large group of muscles which are a factor in the maintenance of health will necessarily degenerate. It is a physiological fact that muscular function stimulates and encourages the activities of all other organs of the body. Anatomy, physiology, and bio-chemistry have become more and more recognized as valuable in understanding and evaluating a normal physiological condition of the human body. We recognize that if and when there is disharmony either as to structure or to function the result means disease. Keeping the body in a normal state necessitates giving nutriment and oxygen. It is further recognized that function must continue if the organ shall not degenerate. To stimulate this function muscular activity is of inestimable value.

The medicine of the future must be preventive medicine. Much has been accomplished by preventive medicine. We have gone far in the prevention of bacterial diseases. Typhoid fever, smallpox, many of the infectious fevers have been prevented—almost eliminated. Tuberculosis, that scourge of civilization a decade or two ago, is being conquered.

We must be able to give our patients something more than prescriptions, pills, powders, and a few remarks about diet and sleep. We must teach them how to live; what to do for their health; how to maintain it. Unless the medical profession recognizes this responsibility people will go elsewhere for such information. There can be no question that cultists who treat disease through and by physiological methods accomplish much to the benefit of the patient and sometimes influence and stimulate our own medical profession to think. Since we recognize that any organ or part of an organ which is not permitted to function will degenerate, why cannot we apply the same principles to the body as a whole? I have mentioned tuberculosis and its control. I believe we all admit that it is through simple principles of health and hygiene that these far-reaching results have been obtained. Whereas tuberculosis has had a constant and continuous decrease in incidence and cause of death in the past decade, cancer is continuously increasing. Why should it not be possible to prevent cancer by improving our physiological well-being by applying sane principles and ideas, and simple rules of health? Reflect on the possibility of results if we follow these simple rules:

1. Proper food in proper amounts.
2. Muscular function in the form of muscular work or exercise.
3. Enough rest and sleep.
4. Moderation in all activities of life.

The trite saying that more people dig their graves with their teeth than by other methods is generally accepted. Most people overeat! We not only could subsist but improve our physical well-being by decreasing our food intake both as to kind and amount.

Rickets, beriberi, and other diseases of under-nutrition have been recognized for years; but very little consideration has been given the diseases produced by over-eating. Over-nutrition plays a stellar rôle in the development of metabolic and chronic disease.

No one denies the value of fresh air, sunshine and physical activity of a child. Unless brought under these advantages the probabilities are that the child will be physically deficient. Most people seem to think that a vocation which does not demand strenuous physical effort is an easy job but do not recognize that it may be a slow way to commit suicide.

That physical activity or muscular activity is important from a standpoint of preventing disease has been known for decades, but the thought has been given little more than lip service. It is my humble opinion that there is and must be a definite relation between the incidence of cancer and deficiency of muscular activity. I feel that muscular activity in the form of exercise of any kind is valuable and should improve the physical well-being of the individual to such an extent that he will maintain health and vigor.

Physical activity stimulates all organs of the body and by organs I mean the internal organs, especially the liver, stomach, intestines, kidneys, lungs, heart, the skin and lymphatic system. By exercise waste is removed; the over-supply of foodstuffs is more quickly oxidized due to increased oxygen intake; elimination by perspiration through the skin is quickened; peristalsis of the intestinal tract is increased. Oxygen is brought to the remotest corners of the body by the blood. The result cannot be disputed. It will improve the general health, and must have its effect in decreasing the so-called chronic diseases, which include heart disease, high blood pressure, affections of the liver, and, perchance, cancer.

In a previous paper by Dr. Dahlstrom and me on the Relation of Muscular Activity to Carcinoma we stated, "Observations are quoted and statistics presented showing that carcinoma is more frequent among the unoccupied, among people of independent means, among the leisured and professional classes, among the over-nourished, well housed, well fed, and among those who live in warmer climates. Carcinoma is less frequent among the people who are actively engaged in a gainful occupation, among the hard working classes, among those who live in large industrial centers, among peoples predominately poor and of necessity frugal and living on an alimentation just sufficient for their actual needs, and among those who live in the colder climate where the struggle for existence is more difficult."

lading between the lines one common factor is noted, that of the varying degree of muscular activity."

Ewing states, "No particular type of diet has any known influence on the incidence of cancer. On the other hand, one may preach without limit moderation in all things, sane and simple living, and minute attention to the general hygiene of the organs." He further states, "Statistics show that sanitary measures which control infectious diseases exercise no such power over carcinoma, which is somewhat conspicuous by a relative failure to attack the poor, the overworked, the derelict, the savage, but chooses a notable proportion of its victims among the well-to-do, the well nourished, the well protected against infectious diseases, and the indolent."

Dr. Louis Dublin, statistician of the Metropolitan Life Insurance Company, says, "Cancer as a cause of disability and death is increasing."

With your permission, I wish to show a few statistics from a study of deaths of males from cancer in Minnesota for a period of three years which was undertaken by my former associate, Dr. A. W. Dahlstrom, and myself some years ago. At this time we have a preliminary report of our findings, and, notwithstanding that some work has since been done, it has been difficult to gather further information due to lack of time as well as economic stress. An hypothesis is given as follows: "That human carcinoma may be the reaction to and the result of chronic irritation of epithelial tissues bathed in body fluids altered by certain metabolic products as a result of deficient muscular activity."

We also obtained from the Bureau of Census a special report on the number of males engaged in each occupation, based on the census of 1920. The deaths in each occupation for three years were totaled after being computed for various types of occupation and placed into six classes—Group No. 1 involving the greatest amount of muscular activity; Group No. 2, moderate amount; Group No. 3, medium amount; Group No. 4, small amount; Group No. 5, farmers, cause of the seasonal character of their work; Group No. 6, those not actively engaged in any gainful occupation.

These various classes will show, or, at least, appear to show, a definite increase in the incidence of cancer deaths beginning with Group No. 1 up to and including Group No. 6. The death rate in No. 6 is thirteen times as great as in No. 1 in the same age period.

Further, when we studied the question of employer and employee we again found a similar relationship between the deaths of the employer as compared with employee, and, necessarily, we believe that the employee will do more of the physical work than does the employer. This held true not only in Minnesota, but also from records obtained from England and Wales, as well as Hungary.

From our findings we concluded that the death rate among males that were actively engaged in a gainful occupation was less than the death rate in those not so actively engaged; that the death rate among males ac-

tively engaged in gainful occupation is inversely proportional to the decrease of muscular activity necessary for that occupation. In other words, it appeared that the death rate was lowest in those occupations involving the greatest amount of muscular activity and highest in those occupations involving the least amount of muscular activity.

"Money, effort, and serious thinking have been expended in great amounts among scientists, in laboratories, and by cancer research workers and up to the present we have not solved this riddle of riddles—the cause of cancer." The amount of literature produced from the study and research brought forth is so great that one is swamped in a morass of information. I fear we cannot see the forest for the trees. One writer, Sir Humphrey Guilford, says, "I have approached the genesis of cancer from the point of view of one who is convinced that no more facts are needed, and that the truth about cancer lies buried under a mountain of information which has accumulated from various parts of the world." He goes further and maintains that the problem has been complicated and obscured from laboratory experiments rather than simplified and clarified.

The work done by Slye and Little on mice and rats, has, no doubt, been an epoch-making contribution, though it would seem that it would be possible to use the patient who has been clinically and pathologically diagnosed as cancerous for study. Would it not be possible to have patients become subjects for study in the question of recurrence of cancer after having his or her cancer removed by operation or through radium? We must admit that the great majority of people are not cured of cancer by our present attack. The disease is often not cured by simply removing the growth. Further treatment must be given, and up to the present time our armamentarium has been x-ray and radium following operation, and discharging the patient with the laconic statement, "Be careful how you live." This is not enough. We must not be satisfied by simply removing the tumor and giving a few x-ray treatments. Would it not be proper and advisable to give this patient our individual attention and consideration; have him watched closely and personally from time to time; give him advice how to live—and by that I mean what to eat, how to exercise; study his blood, and in this way prevent recurrence if that is possible by changing the body fluids and soil; eliminate whatever products of metabolism are present in a cancer case; if possible, change the habits and the life attitudes of the patient? Naturally, this means that some one man or group of men should give his or their time, thought, and attention along the line of diet, exercise, rest, et cetera, in an effort to bring such a patient to the very height of physical perfection. We cannot deny the physiological principle that the man or woman in perfect health cannot and will not be affected by diseases of degeneration. We admit the value of physical well-being through food and function in the proper amount and kind. We likewise recognize the deleterious effects of lack of exercise.

We know that structure depends on function and

that disuse leads to degeneration. From lack of function all tissues suffer to an extent that is not fully appreciated, and with disease various systems gradually become less efficient.

Would it be presumptuous to suggest that the Minneapolis Surgical Society sponsor such a movement; carry it through a number of years, and in this way learn whether or no it is of value? May I briefly outline my plan?

First, that the Minneapolis Surgical Society become interested in a plan for the treatment and cure of cancer by stimulating its members to study the art and science of surgical procedures; that various members be recognized individually or in groups as especially qualified to treat the various types of carcinoma. By that I mean that a certain number of men be designated to give special attention to cancer of the stomach, cancer of the bowel, cancer of the breast, et cetera, and after the surgical procedure has been fulfilled and the pathological findings reported, the patient be referred to some group or individual who would be willing and interested in looking after the patient's future welfare both as to diet, exercise, and general hygiene. Further, it should be understood that the patient will never lose contact with his or her own physician, but that members will coöperate with one another, and that surgical procedures will be undertaken with the assistance of such individuals as are especially designated by the society in their respective fields and the referring surgeon. After this procedure is accomplished, the patient will be referred to the physio-chemical group and, with the surgeon in charge of the patient, further treatment will be outlined and the patient will be watched, advised, and treated by this so-called "physio-chemical" group.

Surely there can be no objection to such an effort. I believe the patient would obtain the best care or service possible from such a surgical arrangement; and following surgical procedure the treatment of the patient can only be beneficial. It cannot possibly do any harm. More than that, it would be an original effort on the part of a group of surgeons who are willing to check their own interests in a sense, to the interest and the welfare of the patient and future education of the public at large.

The medicine of the future must not only recognize that the preventive measures now used in and for bacterial diseases have been valuable; it must interest itself and develop measures which are surely as valuable in the prevention of the so-called chronic diseases. Infectious diseases are more or less self limiting; metabolic diseases are progressive.

The medical profession will change its attitude in the treatment of disease as a clinical entity, and will not only consider morbidity but treat the patient as an

individual whose physiological balance is disturbed. Our effort will be to bring into balance the physiological well-being of the individual and teach him how to keep well and how to prevent disease. As we learn the laws of health better, we will advise and disseminate this knowledge to the public more intelligently. In short, we will become counselors of health.

People will be taught that Nature's laws may be broken with abandon, unless a heavy penalty is exacted. When physiological laws are ignored the individual must pay for his transgressions. Nature is the judge, and, though she may not be as harsh as a man-made judge, she will demand her pound of flesh. The sentence she passes may be in the form of high blood pressure, disease of the heart, blood vessels, kidneys, or, it may be, cancer. A price must be paid for disobeying physiological laws and placing the system in discord and disharmony. Nature quickly gives evidence when we do not follow her dictates. She objects to over-indulgence in food and drink. We note this by certain symptoms that are distressing and uncomfortable. It may be nausea or vomiting, or both; headache and lassitude. She objects to the condition of lack of function. She produces a condition of atrophy when an organ or system is not used. Our mental states are influenced by inability to cerebration if too little sleep or a deficient amount of rest is given. Nature is very tolerant; she will endure great abuse before pronounced symptoms develop; but she is a stern master and sooner or later the day of reckoning will arrive.

Diseases such as cancer are metabolic diseases; though we do not know what is the cause of cancer, we know it is a disease seen in the time of life when degeneration begins; where over-abundance or over-supply, or lack of function, or both have been present. That cancers are curable when diagnosed and seen early enough they can be no question. The greatest problem in the cure of cancer lies in its prevention, and this can only be accomplished through a normal physiological form of living.

The first physicians by debauch were made;
Excess began and sloth sustains the trade.
By chase our long-lived fathers earned their food;
Toil strung the nerves, and purified the blood;
But we, their sons, a pampered race of men,
Are dwindled down to threescore years and ten.
Better to hunt in fields for health unbought
Than fee the doctor for a nauseous draught.
The wise for cure on exercise depend:
God never made his work for men to mend.

—JOHN DRYDEN

The meeting adjourned.

E. A. REGNIER, *Secretary*.

MINNESOTA STATE MEDICAL ASSOCIATION

Eighty-fourth Annual Meeting

May 2, 3, 4 and 5, 1937

Saint Paul, Minnesota

HOUSE OF DELEGATES

First Meeting

Sunday Afternoon, May 2, 1937

The opening session of the House of Delegates, held in connection with the Eighty-fourth Annual Meeting of the Minnesota State Medical Association at the Lory Hotel, Saint Paul, May 2 to 5, convened at 3 p. m., May 2, Dr. A. W. Adson, Rochester, presiding.

Dr. E. S. Boleyn, chairman of the Credentials Committee, gave a preliminary report, announcing thirty-three delegates in attendance.

President Adson announced the personnel of several Reference Committees to consider the various committee reports.

SCIENTIFIC REFERENCE COMMITTEES

Medical Education Reports

S. A. Slater	Worthington
C. J. Ehrenberg	Minneapolis
R. C. Hunt	Fairmont
Warner Ogden	St. Paul
A. H. Sanford	Rochester

Miscellaneous Scientific Reports

C. L. Roholt	Waverly
B. A. Smith	Crosby
B. B. Souster	St. Paul
R. V. Williams	Rushford

NON-SCIENTIFIC REFERENCE COMMITTEES

Officers and Council Reports

W. F. Braasch	Rochester
G. I. Badeaux	Brainerd
P. C. Leck	Austin
F. A. Olson	Minneapolis
C. L. Sherman	Luverne

Constitution Reports

J. C. Hultkrans	St. Paul
E. A. Kilbride	Worthington
C. A. McKinlay	Minneapolis

State Health Relations Reports

A. K. Stratte	Pine City
B. F. Davis	Duluth
H. R. Tregilgas	South St. Paul

Lay Education Reports

A. H. Zachman	Melrose
L. A. Buie	Rochester
G. G. Cottam	Minneapolis
H. B. Grimes	Madelia
W. G. Sahr	Hutchinson

Resolutions Committee

C. A. Stewart	Minneapolis
A. L. Vadheim	Tyler
Swan Ericson	Le Sueur

Medical Economics Reports

M. C. Piper	Rochester
J. R. Aurelius	St. Paul
B. J. Gallagher	Waseca
Herman Linde	Cyrus
G. J. Tweedy	Winona

Credentials Committee

E. S. Boleyn	Stillwater
F. J. Lexa	Lonsdale
Gilbert Seashore	Minneapolis

The minutes of the last meeting were accepted as published in MINNESOTA MEDICINE.

Dr. Stewart read two resolutions in memory of Dr. H. M. Workman, chairman of the Council, and Dr. O. E. Locken, speaker of the House, whose deaths occurred during the year. These were regularly adopted.

The president read the reports by title and assigned them to the Reference Committees.

The following resolution was referred to the Committee on Miscellaneous Scientific Reports:

"Resolved, That a committee should be appointed by the House of Delegates of the Minnesota State Medical Association to study the whole matter of reporting potential sex criminals and looking to the possibility of recommending a change in the Minnesota statute and unwritten law on privileged communications to permit physicians to cooperate more fully with the police in the suppression of sex crimes."

A resolution that the Minnesota State Medical Association approve the purpose of the Summer Round-Up and offer its cooperation to the Minnesota Parent-Teacher Association in promoting the program and in working out proper methods was referred to the Committee on Lay Education Reports.

Dr. Boleyn reported forty-nine delegates in attendance.

The House recessed at 3:55 p. m. to reconvene at 7:30.

HOUSE OF DELEGATES

Second Meeting

Sunday Evening, May 2, 1937

The second session of the House of Delegates convened Sunday at 7:40 p. m.

The report of the Council was given by Dr. George Earl, Chairman.

REPORT OF THE COUNCIL

The opening session of the Council, held in connection with the Eighty-fourth Annual Meeting of the Minnesota State Medical Association, convened at 9:20 a. m. Sunday, May 2, Dr. George Earl, Chairman, presiding.

The following were present:

President	A. W. Adson
Secretary	E. A. Meyerding
Treasurer	W. H. Condit
Past President	W. W. Will
Second District	L. L. Sogge
Third District	B. J. Branton
Fourth District	J. S. Holbrook
Fifth District	G. A. Earl
Sixth District	J. M. Hayes
Seventh District	E. J. Simons
Eighth District	W. L. Burnap
Ninth District	B. S. Adams

The minutes of the previous meeting were approved.

Dr. J. M. Hayes stated that the report of the fiscal agency was the same as reported at the last Council meeting and the report was accepted and filed.

The report of the treasurer was presented by Dr. Condit and accepted.

REPORT OF THE TREASURER

Minnesota State Medical Association

Statement of Cash Receipts and Disbursements for the Year Ended December 31, 1936

CURRENT FUNDS

Cash on hand, December 31, 1935	\$ 3,324.09
Cash Receipts, year 1936:	
Dues collected, year 1935 and prior	\$ 341.25
Dues collected, year 1936	29,383.50
Dues collected, year 1937	3,690.00

Total dues collected	\$33,414.75
Contributions to Herman M. Johnson memorial fund	1,573.75
Interest on savings accounts	155.21
Minnesota Medicine	611.72
Sale of diabetes books	107.88
Sundry items	23.67
Transferred from Technical Exhibit Fund for credit of "Annual Meeting" expense	2,500.00
Total receipts	\$38,386.98

Cash Disbursements, year 1936:	
Special committees:	
Diabetes	9.97
Educational fund	5,208.15
Historical	319.70
Hospital and Medical Education	2.00
Medical Economics	1,830.77
Public Health Education Comm.	2,998.49
Radio	368.52
State Health Relations	126.88
Works Progress Administration	40.50
Unbudgeted Committees	1,068.63
Minnesota Medicine subscriptions	4,222.00
Furniture and Fixtures	21.10
Dues refunded	78.50
Solicitation expense, Herman M. Johnson memorial fund	84.08
Administrative expenses:	
Annual meeting (Rochester) ..	2,602.33
Conferences:	
A. M. A. delegates	115.83
President's contingency fund ..	300.00
Other	90.36
Council expenses	310.01
County Officers' Meetings	348.49
Miscellaneous expenses	366.69
Office supplies and postage	595.88
Printed matter	467.73
Rent	636.00
Secretary's salary	4,200.00
Secretary's travel expense	361.98
Stenographic service	2,986.69
Field Secretary's salary	3,600.00
Field Secretary's travel expense	933.76
Medical relief	115.56
Special session, House of Delegates	221.96
Telephone and telegraph	623.68
Treasurer's salary	100.00
	18,976.95

Total disbursements \$35,356.24

Cash on hand, December 31, 1936:	
American National Bank, checking account	2,712.87
American National Bank, savings account	2,057.66
Farmers & Mechanics Bank, savings account	1,557.88
First National Bank, savings account	26.42

Total cash on hand \$ 6,354.83

The Council recessed at 10:20 a. m.

* * *

The meeting reconvened at 12 o'clock.

Mr. B. E. Kuechle presented the idea of a panel for industrial medicine in Wisconsin. Dr. Adson moved that this be referred to the Industrial Relations Committee and that the committee meet with representatives of insurance companies to formulate a plan to be

resubmitted to the Council before action is taken. This was seconded and carried.

Mr. J. L. Perl, Saint Paul Association of Commerce, discussed holding the convention in Saint Paul and Minneapolis in alternate years. Action will be taken by the House of Delegates.

Dr. E. K. Geer told the Council that county state sanatoria are said to be admitting patients from out of the state for treatment. Dr. Hayes moved that matter be referred to the Board of Control for investigation. The motion was laid over for action until after further information had been secured.

Dr. L. R. Critchfield, on behalf of the Committee on Public Health Education, requested an addition of \$1,000 for the year, making a total budget of \$4,000. This request was referred to the Budget Committee for report to the Council later.

Mr. Manley Brist spoke on the matter of doctors brought before the Narcotic Division and the Liquor Control Commission.

Dr. Sogge told of a special meeting he attended at the House of Delegates of the Wisconsin Medical Association, called to consider certain sickness insurance bills introduced in the legislature.

Dr. Olin West, secretary of the American Medical Association, was presented to the Council and spoke of narcotic violations.

Dr. C. B. Wright, a trustee of the American Medical Association, called attention to the provision in the new constitution that any member convicted of a felony automatically loses his membership and must again apply for membership. Dr. W. F. Braasch also discussed this subject.

The meeting recessed at 2:50 p. m.

* * *

The Council reconvened at 5:10 p. m.

Dr. Horace Newhart spoke on the question of creating a state commission on school health and stated that a resolution similar to those passed by the Hennepin and Ramsey County Societies would bring the matter properly before the public.

A correction was made in the action on group hospitalization taken at the previous meeting. The following motion was substituted:

"That the Council approve the bill, providing nothing in its provision shall be construed to include professional medical care, and that Dr. Sogge's committee study it further to find that there is nothing objectionable in it."

Secretary Meyerding announced that the total paid membership as of April 27 was 2,227, a gain of 100 over last year.

No action was taken on the recommendation of the Constitution Committee that the Editing and Publishing Committee be enlarged. Communications were read from Dr. T. A. Peppard, Secretary of the Editing and Publishing Committee, "concerning the recent action of Hennepin County Medical Society relative to *Journal-Lancet*" (letter to Chairman of Council dated 4-5-37). The matter was deferred in the Council until a special committee of three members from the Council and three from the Editing and Publishing Committee could meet with a committee from the Hennepin Society to study the matter.

There was further discussion on the request of the Public Health Education Committee for an addition of \$1,000 in the budget.

Dr. Sogge presented a resolution pertaining to the Herman M. Johnson Memorial Fund, to make definite the purpose for which the fund is being raised. The resolution was referred to the House of Delegates for action.

The meeting recessed at 6:10 o'clock.

* * *

The report of the Council was adopted.

Dr. Boleyn reported fifty certified delegates in attendance.

Dr. Olm West then addressed the House of Delegates.

The House of Delegates next heard an address by Dr. Edward H. Skinner, Kansas City, president-elect of the American Radium Society. Dr. Skinner spoke on the subject, "How the Kansas City Profession Is Meeting Social Security Problems." He said, in part:

"In Kansas City we have attempted to bring about hook-up between the county medical society and all the organizations which might touch upon the social security program, such as the Chamber of Commerce, the Community Chest, the Council of Social Agencies, in which the Health Conservation Association is a part. Inducing physicians to become identified with these organizations serves a very useful purpose. There is no reason why a physician should not be an active citizen at the same time he is trying to be a good doctor. He should have just as healthy an interest in the social welfare of his city as any other citizen . . .

"Our city health director doesn't have to inquire about our attitude, because he is a member of the county medical society . . . Our city health department has run successfully because of the hookup with the county medical society primarily. All immunizations and vaccinations are completed in the physicians' offices at a minimum fee, and the only place they are given free is at the health department office at the City Hospital. Few go to the City Hospital, and we now have 93 per cent of our school population immunized with no deaths from diphtheria in nineteen months.

"We have a group of physicians who solicit funds for the Community Chest each year so we are enabled to make a showing as physicians. At the same time we publish a survey showing that 166 doctors are serving in the staff of the general hospital and 44 on the children's Mercy Hospital, donating their time. That fact is no excuse for the entire membership not giving since 500 members should not be permitted to hide behind the charity work of a part . . .

"I think high school students know more about the pro and con upon the socialization of medicine than the majority of members of the county medical society. We dislike socialized medicine thoroughly, but we should know the reasons why we dislike it and why everyone should dislike it. Not because it disrupts private enterprise and the practice of medicine, but because the citizens will not receive a service commensurate with what they pay for. If they have to pay the bill for the socialization of medicine, they will not get out of it what they should . . .

"It is up to us to maintain and to cause to grow into a more useful unit our own organization within our community, the county medical society. That is the bulwark of our defense. That is why the idea of integrating ourselves with the citizenship through all of these social welfare organizations, Community Chest, service clubs, Chambers of Commerce, and political clubs will serve as our best fortification for the preservation of our rights and privileges as physicians.

* * *

In accordance with the recommendations of the Reference Committees, the following reports were accepted by the House of Delegates.

COMMITTEE ON MILITARY AFFAIRS

Lt. Col. F. L. Smith, chairman, reported 405 active members in the Minnesota Medical Reserves. Activities of the committee during the past year included an extensive exhibit at the 83rd Annual Meeting of the Minnesota State Medical Association; the Eighth Annual Medical Reserve Officers' Inactive Duty Training Unit held October 4 to 17 at Rochester under the auspices of the Mayo Foundation; participation in National Defense Week.

Corps Headquarters has openings for Medical Reserve Officers interested in getting six months' or a year's service with CCC camps in the eight states comprising the Seventh Corps Area. Application was made to the War Department by the President of the University in 1936 for re-establishment of the Medical R.O.T.C.: Twenty-five graduates of the Medical School have applied through the War Department for commissions in the Medical Corps during the year.

COMMITTEE ON HOSPITALS AND MEDICAL EDUCATION

Dr. L. F. Hawkinson, chairman, reported that plans were made to provide program chairmen with a list of available speakers and their subjects. The Committee cooperated with the Children's Bureau of the Minnesota Department of Health under direction of Dr. Hartley on Refresher Courses. Centers were selected and plans for arrangements and publicity formulated at a meeting in March.

The Reference Committee, in approving the report, placed special emphasis on the paragraph stating, "The Committee believes that many of the papers presented before the county and district societies are too technical and that it would be to the interest of better medical education if the speakers would give simple, practical talks."

COMMITTEE ON DIABETES

The Committee recommended that the Minnesota Public Health Association be petitioned to create a Council on Diabetes to develop a program for the prevention and care of diabetes in Minnesota. Dr. R. M. Wilder, chairman, reported. The matter now is under the advisement of the Council of the Minnesota State Medical Association.

The Committee plans to prepare an exhibit for the 1938 medical meeting showing campaigns against diabetes in cities where the Public Health Association has cooperated in such a campaign. The increasing incidence of diabetes has brought it into ninth place among the causes of death.

COMMITTEE ON CANCER

Because the hope for cure in cancer rests mainly in an early diagnosis, the Committee for the past three years has been making an effort to educate physicians and stimulate their interest in the subject through meetings of local societies devoted entirely to cancer. Dr. Martin Nordland, chairman, reported.

Within the past year a Cancer Education Program for the public has been sponsored by the Women's Field Army of the American Society for the Control of Cancer and an appeal was made to the medical profession for help in carrying out this program. A meeting of the Cancer Committee was called in October. Plans were discussed for the creation of a Speakers' Bureau and it was recommended that committee members act as advisors in the presentation of the Cancer Education Program in their territories. Each member was asked to furnish a list of speakers to be filed with the Secretary and recommendations were also made for an enlarged educational exhibit at the State Meeting.

COMMITTEE ON INTER-PROFESSIONAL RELATIONSHIP

Twenty-four representative nurses, hospital administrators, and physicians were present at a dinner held by the committee, April 3, Dr. F. J. Savage, chairman, reported. Speakers included Dr. A. F. Branton, who discussed "Hospital Problems in Relation to Nursing," Mr. Drummond, Mr. Norby, Miss Densford, Miss Urch, Miss Halvorsen, Miss Peterson, and Dr. C. B. Wright. Mr. Norby stated that a larger number of general duty registered nurses than ever before is now employed by hospitals. Miss Halvorsen presented a study covering a ten-year period on the number of

nurses registered annually with the state board of examiners, showing that, in spite of the fact that the number of approved schools of nursing have been reduced from sixty-four to thirty-three, there has been quite a uniformity in the number of nurses appearing annually for examination. Another fact brought out was that from April 1, 1936, to April 1, 1937, 862 nurses left the state, 40 per cent going to California.

The Committee believes that discussion of problems which are common to physicians, nurses and hospital administrators, when the various groups represented can carry back to their own organizations the results of such group discussion, is well worth while and a definite aid in helping to solve their common problems.

The Reference Committee recommended further study on the problem of nursing in small country hospitals as the cost of nursing in such institutions today is well nigh prohibitive and the practical nurse does not solve the problem.

HISTORICAL COMMITTEE

Dr. J. M. Armstrong, chairman, reported that material has been gathered on the History of Medicine in Dodge, Waseca and Rice Counties, and some additional material on Nicollet, Wright and Ramsey Counties.

COMMITTEE ON SYPHILIS AND SOCIAL DISEASES

The report of this Committee, originated by the Council in December, was made by Dr. S. E. Sweitzer, chairman. A meeting was held in February when a series of eleven questions for solution in syphilis control, sent from the Surgeon General's office, were discussed and recommendations made on each.

The Committee is coöperating with the State Department of Health, which has charge of epidemiology, and it expects to aid in carrying out plans proposed by the United States Public Health Service. The Committee believes that clinic facilities in large centers are adequate but it is hoped to establish clinic centers throughout the state with free treatment for indigent and marginal groups. Plans also call for working out of provisions for serological laboratory facilities by the State Board of Health and a possibility of the establishment of fever treatment centers for gonorrhea.

The report with the recommendations on the eleven questions was approved by the Reference Committee with the exception of those on Question 8 dealing with the availability of hospital beds for treatment of cases needing hospitalization. This was referred back to the Committee for clarification.

COMMITTEE ON MATERNAL WELFARE

Dr. R. D. Mussey, chairman, reported that, in accordance with its aims and purposes, the Committee has coöperated with the Committee on Medical Education and Hospitals of the Association, the Extension Division and the Medical School of the State University and the Division of Maternal and Child Hygiene of the Department of Health, to arrange a refresher course for physicians in obstetrics and pediatrics. This work was made possible through the Social Security Act.

The course which has been completed was in a sense a trial course. It was given in the University with six obstetricians and six pediatricians giving the lectures. This series met with a favorable response.

It was further announced that a similar series, with one talk a week for six weeks, would be given at Worthington, Brainerd, Fergus Falls, Mankato, Grand Rapids and St. Cloud, beginning May 26.

COMMITTEE ON DEAFNESS PREVENTION AND AMELIORATION

Dr. Horace Newhart, chairman, reported the following activities of the Committee during the year: participation in educational exhibits; fostering, by the loan of equipment, audiometer surveys to disclose hearing deficiencies among rural school children in Goodhue and Blue Earth counties; conducting demonstration survey of the school population and providing a program for a health meeting at Little Falls; address on the Conservation of Hearing before many groups attending meetings to initiate preparation of a bill to establish a Minnesota Public Health School Commission; carrying on correspondence with an ever growing number of inquirers regarding conservation of hearing.

The Committee reports a notable increase in the field of preventive medicine and recommends the continuation of this committee and a grant by the Council of funds towards defraying some of the expenses of the Committee.

COMMITTEE ON SCHOOLS FOR LABORATORY TECHNICIANS

Dr. Leo G. Rigler, chairman, reported that since the committee functioned largely as a clearing house for inquiries concerning various schools in the state of Minnesota, it seemed that the necessity for the committee had ceased and it should be disbanded. Inquiries in the future can be answered in the secretary's office by reference to approved lists which have been completed.

COMMITTEE ON INDUSTRIAL RELATIONS

Dr. J. M. Hayes, chairman, stated that many reports have come in to the Committee from members complaining about the Compensation Insurance Adjusters attempting to send their patients to the insurance doctors. Apparently reports are still going out from the Industrial Commission stating that the patient must take the insurance company doctor or pay his own expenses.

The Reference Committee recommended that the Association reiterate the previously adopted principle of the *free choice of physician by a patient*.

COMMITTEE ON PUBLIC HEALTH EDUCATION

The most urgent function of this Committee, Dr. L. R. Critchfield, chairman, stated, is to educate the public, on one hand, to look to the local practicing physician for the protection of their health, as well as for treatment in time of illness, and to educate our members, on the other, to assume an official responsibility in consultation with the department of health, for all phases of medical care and health protection in their communities.

The large number of current lay public health campaigns have great potentialities for good if they are sponsored and carefully directed by physicians. If they are not so sponsored, they are only too likely to present serious difficulties and serious misunderstandings of the policies and principles of medicine. Among these important campaigns are the cancer education campaign, campaign for syphilis control, campaign to inform people on the effectiveness of pneumonia serum.

The private practitioner is bound to inform himself thoroughly on the newest technic in diagnosis and treatment. It is also his obligation to keep before the public eye the sensible and simple rules of health to be practiced in daily living.

To inculcate a healthy attitude toward all new developments and to preach that the family doctor knows these things and can give the best treatment is the end toward which this Committee maintains several regular services designed to reach as many people in Minnesota

possible, including: the College Lecture Course, now its fourth successful year; weekly newspaper health advice; health talks reaching many groups, a total of 6 were given; speakers' bureau and speakers' library; giving *Everybody's Health* magazine in an advisory capacity; coöperating in 4-H Club examinations, coöperating with the Women's Auxiliary members, who are leaders in community life.

There is no doubt that this Committee must look forward to increasing and intensifying its program on public health activities. A larger expenditure of funds than ever before is going to be necessary if we are to maintain the close coöperation and extend the proper assistance that the great new health campaigns demand of us. If we do not extend this coöperation, the movements themselves will suffer and other non-medical groups will assume complete control.

The Reference Committee commended the activities and splendid results obtained by the Committee and recommended that an increase in the budget allowance for the continuance of the work of the Committee, requested by the chairman, be allowed if possible.

COMMITTEE ON STATE HEALTH RELATIONS

Dr. T. H. Sweetser, chairman, reported on the activities of this Committee. The care of the indigent has come up repeatedly from various parts of the state. Maps have been made showing conditions in the state as compared with a year ago. The survey of medical care in state institutions was completed and a report presented to the Council. This report has apparently already borne fruit. Some study has been made of the medical aspects of the Old Age Assistance Act. The question of balances between local hospitalization of the indigent sick and reference of such patients to the University Hospital comes up from time to time; any cases must be considered individually. The Committee or some of its members have worked with many of the other State Society committees, as well as with the Board of Health and other federal, state and local agencies.

EDITING AND PUBLISHING COMMITTEE

Dr. J. T. Christison, chairman, reported an increase in advertising revenue and volume for MINNESOTA MEDICINE over the previous year. The increase in revenue amounts to 3.5 per cent over 1935. The net cash surplus for the year amounts to \$774.36, as compared to \$611.72 for 1935.

EDITORIAL ASSOCIATION COMMITTEE

The Editorial Association distributes our Health News Service to the 500 newspapers of Minnesota through its Publicity Control Bureau. Concerning this service and its value, the president of the Editorial Association states that this is the best service of the sort available to rural newspapers anywhere in the United States, and is a valuable public service. He felt that a question and answer section would be a valuable addition to the service and the Committee believes that the possibility of adding such a service should be investigated with a view to establishing it if possible.

The relations between the two associations have been very close and the Editorial Association has advised our association on policies such as combating anti-vaccination propaganda in the newspapers and on newspaper publicity on the educational phase of the campaign to control syphilis. In the latter case, it was believed advisable to hold back publicity until definite plans had been formulated.

RADIO COMMITTEE

Dr. R. M. Burns, chairman, reported that from May, 1936, to April 30, 1937, Dr. William A. O'Brien gave

thirty-seven talks over WCCO for the Minnesota State Medical Association and ten talks for the Minnesota State Dental Association. This radio service has been offered to the people of the Northwest since April 3, 1928. An attempt has been made to offer a balanced service which would include all the phases of medicine. Dr. O'Brien also gave over 100 health talks before various groups. An attempt has been made to answer all mail in connection with the broadcasts. There is a constant demand for more information.

Station WCCO has continued to coöperate, is eager to continue the program and sincerely regrets its inability to give us a fixed yearly time.

An invitation was received from a new radio station in the Twin Cities to make use of its facilities for a weekly talk. It was the opinion of the Committee that utilization of the radio should be encouraged, provided the broadcasts can be conducted properly by qualified speakers, suitably endorsed. The fact that talks by Dr. O'Brien cannot be heard in some parts of the state makes it particularly desirable that programs be arranged over local stations. The Council gave special permission to the St. Louis County Medical Society to arrange broadcasts in that county with the approval of this Committee.

The Committee urges others of the larger local societies to do likewise provided program arrangements be approved by this Committee to avoid conflicts. Special emphasis was laid upon the necessity of developing skillful speakers.

The action of the Judicial Council of the American Medical Association, which went on record as follows, was adopted as the Committee's official policy on the matter of speakers:

"No physician engaged in private practice should contribute articles to local publications under his own name or should speak over the radio as an individual. He may write or speak as an official representative of the Medical Society in which he holds membership, however, provided it is made clear that he is writing or speaking for the Society."

COMMITTEE ON UNIVERSITY RELATIONS

Dr. W. W. Will, chairman, reported that during a recent meeting of the Committee with Dr. H. S. Diehl, Dean of Medical Sciences, the following information was received: preference in admittance to the medical school is given citizens of Minnesota; new application admittance blanks embrace aptitude and qualities other than scholarship for consideration in determining applicant's desirability; as recommended by this committee, cognizance has been taken of the necessity for revising courses in prescription writing, pharmacology and therapeutics in general, with the view to making them more practical; during the fourth year of medical studies, a course of socio-economics including ethics, fee schedules, medico-legal problems, collections, malpractice insurance, patient-physician relationships and other topics will be included.

COMMITTEE ON MEDICAL ECONOMICS

The editorial phase of the work of the Committee has been predominant during the past year, Dr. W. F. Braasch, chairman, reported. We believe that this section in MINNESOTA MEDICINE has kept the members informed in regard to vital social and economic problems of the day.

COMMITTEE ON THE SURVEY OF MEDICAL COSTS

Summary of a study of 500 replies to a preliminary questionnaire on Medical Costs was reported on by Dr. W. W. Will, chairman of the committee appointed to collect data in defense of the present status of the practice of medicine.

Letters were mailed to all members of the State Association willing to coöperate in providing facts on the costs of medical care.

COMMITTEE ON FRACTURES

It is suggested by the chairman, Dr. R. C. Webb, and members of this Committee, that the Fracture Committee shall consist of eighteen members, two from each Councilor District, six of whom shall be appointed annually for a three-year period with a chairman to be appointed annually. The function of the committee shall be to promote improvement in the treatment of fractures throughout the state by: (1) improving first aid and transportation equipment on ambulances and by promoting instruction for ambulance attendants in handling fractures; (2) obtaining the adoption of improved diagnostic methods in x-ray laboratories; (3) obtaining improvements in equipment for treatment of fractures in the hospitals; (4) arranging for papers and discussions on fracture treatment at medical society meetings; (5) promotion of study of types of fractures involved in malpractice lawsuits; (6) cooperation with other fracture committees.

COMMITTEE TO STUDY CONTRACT PRACTICE

Dr. O. W. Yoerg, chairman, reported that the Committee believes that if all County Societies indorsed and accepted the Standards Relating to Contract Practice as simplified and revised by the Judicial Council of the American Medical Association, which this Committee recommended for adoption last year, and if the profession at large lived up to its contents, this Committee could be dispensed with except that it might act as an arbitration board when disputes should arise.

The Reference Committee recommended that the Committee be retained to act as an arbitration board.

MEDICO-LEGAL ADVISORY COMMITTEE

Dr. B. J. Branton, chairman, reported that the Committee has continued the work begun last year and feels that it has accomplished much toward the ideal sought for, a united profession against the unjustified law suit for malpractice. Activities of the Committee have included frequent meetings with insurance representatives, lawyers for insurance companies, hospital executives, advisory boards of component societies and legislative people; a trip of investigation to New York and questionnaires sent to all state societies for valuable data on methods to combat this evil; monthly editorials in MINNESOTA MEDICINE, talks before societies, use of a new form of report card to make membership more familiar with the situation.

The Reference Committee recommended that this Committee be continued and also that some financial consideration be allocated for the expenses of the Committee, approximately \$500 a year for the expenses of this investigation.

COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Dr. L. L. Sogge, chairman, gave a detailed oral report of the work of his committee before the Reference Committee on State Health Relations Reports. The Reference Committee felt that this committee should be highly recommended for the tireless and efficient work which it had done. Out of some 1,800 bills introduced into the legislature last session, many of which pertained to and were detrimental to the medical profession, only one bill having relation to the medical society was allowed out of the committee and that was later killed.

Committees which reported no special activity during the past year were the Committee on Medico-Legal Affairs and the Committee on Public Health Nursing.

REPORT OF THE COUNCIL AND SECRETARY

The Secretary reported that the Association, with its increasing cooperation with State and Federal Welfare agencies, is becoming an integral part of the machinery of relief and Social Security and is in a position to help of real public service and to protect the interests of the doctor.

Sound principles in the management of medical care for the indigent are being established in all of the official agencies concerned in relief work, and are now being put into practice in many counties, while delay in other counties has been caused by the fact that county officials have been awaiting the passage of the Public Welfare Bill, which should standardize relief and welfare organization.

Welfare boards created by this bill will work with the Contact Committee of Three. As physicians who are already familiar with administrative problems, they will be in a position to assist in the selection of qualified members for these boards and to cooperate in the outset in any reorganization that may take place in the management of medical care for the indigent recipients of Old Age Assistance.

One of the important functions of the State Office is the maintenance of close relations with the official agencies—State Board of Control and its Coordinate Field Service, State Board of Health, ERA, WPA, and relief workers in the counties, as well as the United States Public Health Service and many others. We have assisted not only with services of our members but also with cash appropriations and services of our paid employees. For about a year and a half Mr. R. R. Rosell, assistant to the Secretary, has carried out this work with conspicuous success.

Wherever it has seemed advisable, Mr. Rosell has helped the Contact Committees and other society representatives to secure better care of the indigent in their counties. He has kept in touch with relief workers throughout the state in order to keep them informed of the State Association's policy on relief and to foster good will generally.

As the special meeting of the House of Delegates held November 1, certain established medical policies were restated for submission to the Interim Committee which was considering legislation for the reorganization of public welfare in the state. This policy involves chiefly the free choice of physician and free choice of hospital where private hospital facilities are available, adequate and practicable. It disapproves the practice of bidding in the rendering of professional services to recipients of relief; points out that adequate medical care is of sufficient importance, both to patient and to taxpayer, to warrant separate consideration of each individual case, and also points out that there are individuals who are in need of medical relief but not on relief as far as other necessities of life are concerned.

An unusual number of public health education campaigns are in progress, constituting a challenge to the medical profession. Doctors should be ready and familiar with the newest technics of diagnosis and treatment when the public, inspired by these campaigns, comes to them. One of these campaigns is to control syphilis. Another is the campaign of education about cancer which is being carried on by the Women's Field Army of the American Association for the Control of Cancer, and which has had the approval of the Council and the assistance of physicians in various parts of the state. There is the nation-wide campaign of the Committee on Maternal and Child Welfare; the movement to educate the public to proper care for diabetes; and the established campaigns on tuberculosis and heart disease. In so far as all of these efforts bring people to their doctors for treatment at a time when their disease can easily be cured or, perhaps, prevented, the

great good and should have every encouragement in the doctor.

The State Office staff has continued under the various committee auspices to carry on its regular established services, such as the Health News Service, under the auspices of the Committee on Public Health Education and the editorial assistance in preparing the Medical Economics Section for MINNESOTA MEDICINE under the auspices of the Committee on Medical Economics.

There is also the Speakers' Bureau and the Speakers' Library, and the assistance and booking of the College Lecture Courses carried on under the joint auspices of the Minnesota Public Health Association and the State Medical Association. These activities belong mainly to the Committee on Public Health Education. The present budget of this Committee will not permit active participation in any of the additional work that will come before us. More money, if any could be made available, should be allotted to the Committee at once.

As more and more of our committees are drawn into active service to advise upon public problems, more and more secretarial work is required at the State Office, and we are consequently obliged to call more and more upon the staff of the Minnesota Public Health Association, which is so fortunately at hand at our joint headquarters. Thus the practical advantages of close coöperation between the two organizations become each year more apparent.

During the past year, our Association has suffered great losses in the deaths of Dr. H. M. Workman, Chairman of the Council for many years, and Dr. O. E. Locken, speaker of the House of Delegates.

ANNUAL COUNCIL REPORT

The Council has met seven times during the past year. The problems considered have been concerned largely with the determination of relations between the ever-expanding medical programs of Federal and State agencies, and the private practice of medicine. Responsible officials of these organizations have discussed their plans fully and frankly with the Council. Dr. A. J. Gesley, State Health Officer; Dr. H. E. Hilleboe, State Board of Control; Dr. E. C. Hartley, Division of Child Hygiene, in charge of the Refresher Courses, have asked the advice and endorsement of the Council. Dr. H. S. Diehl, Dean of Medical Sciences, University of Minnesota, has attended several Council meetings and is serving as ex-officio member on several important committees.

Among the projects approved by the Council and in which committees of the State Society are now coöperating are: (1) Promotion of vaccination and immunization campaigns; (2) Refresher courses; (3) The Social Security program for crippled children; (4) Maternal and Child Welfare; (5) Public Health Units, which have been established in three districts of the state in order to permit the Department of Health to take advantage of funds available under Title Six of the Social Security Act. Headquarters are at Bemidji,ankato, and Winona.

Frequent requests are made of the Council for a standard fee schedule for the entire state. The Council again went on record as opposed to such a schedule on the ground that a standard schedule that will apply to the entire state is not feasible. Fees differ widely and cannot be standardized.

A Committee on the Survey of Medical Costs was appointed by the Council, including Dr. W. W. Will, Marth, chairman; Dr. T. H. Sweetser, Minneapolis; Dr. A. W. Adson, Rochester; Dr. E. A. Meyerding, Saint Paul; Dr. H. S. Diehl, University of Minnesota; and Mr. R. R. Rosell, assistant to the Secretary, ex-officio members. A preliminary study of replies to an introductory questionnaire sent out by the Committee shows that professional expenses are somewhat higher

in the specialties, especially in surgery, than in general practice. Otherwise there seems to be no marked difference in professional expenses between the rural and city practitioners and between other specialties and general practice.

Other new committees include the Committee on Syphilis and Social Diseases and a Committee on Fractures to coöperate with the Medico-Legal Advisory Committee. The campaign of the Women's Field Army of the American Society for the Control of Cancer was a matter of importance considered by the Council. At the Council's request the State Office has lent what aid it could to this campaign, and a close association between the Association's Cancer Committee and the Field Army has been approved. The importance of willing coöperation on the part of physicians in this campaign is apparent.

The American Legion plan for physical examination for Legionnaires received attention and approval in principle. Members of the Public Health Education Committee were instructed to discuss the character of the examination with Legion officials. It is hoped that proper consultation may avoid the danger of endorsing an examination which is not thorough enough for usefulness and at a price which would make a complete examination impossible.

Regarding Resettlement Projects, in all but one, medical care is provided by local physicians on a fee basis. A physician for one camp was approved after investigation and the recommendation was made with the understanding that local physicians were to be used wherever practicable.

The whole question of radio broadcasting by the State Medical Association or any of its units was brought before the Council as a result of a new offer of time on WMIN. This offer was turned over for consideration to the Radio Committee, but permission was explicitly given to the St. Louis and Olmsted County Medical Societies to arrange for regular programs over their radio stations subject to the approval of the Radio Committee. Other large affiliate units were invited to submit similar requests to the Council.

Dr. E. J. Simons of Swanville, Councilor of the Seventh District, was appointed to succeed the late Dr. O. E. Locken on the Certification Board of Public Health Nurses.

The H. M. Johnson Memorial Fund was still short \$237.44 of the \$2,000 goal and it is hoped that any member who may have overlooked this opportunity to honor Dr. Johnson will make his contribution. A date for the first lecture remains to be set.

There is probably less cause for alarm as to the safety of the fundamental principles of medicine today in Minnesota than there was a year ago. The more radical elements are looking for the time being to the Social Security Act to achieve what they might have tried to achieve by headlong experiment in the socialization of medical services. At the same time official agencies carrying out the provisions of the Act are working closely with organized medicine. However, the efforts of organized medicine will avail nothing if the individual member in the remotest county society does not also do his part. He must work public spiritedly with his local welfare officials to carry out sound programs in his community.

REPORT OF COUNCILORS

In moving the adoption of the reports of the Councilors, the Reference Committee stated, "Upon reviewing the reports of the Councilors, it is obvious that the affairs of the various districts are in a harmonious state. In the Second District report, we note the importance of the medical clubs, of which there are many in the district. It would seem that the practical value of these clubs for the purpose of discussing the imme-

diate problems of the physician should be recognized by each county medical society."

Councilors reporting that affairs were satisfactory in their districts include:

H. Z. Giffin	First District
L. L. Sogge	Second District
B. J. Branton	Third District
J. S. Holbrook	Fourth District
George Earl	Fifth District
J. M. Hayes	Sixth District
E. J. Simons	Seventh District
W. L. Burnap	Eighth District
B. S. Adams	Ninth District

The resolution on the reporting of sex criminals was adopted and assigned to the Committee on Medico-Legal Affairs for scientific study. The resolution approving the Summer Round-Up was also adopted.

Dr. F. J. Lexa of Lonsdale presented the matter of disclosure of information, obtained from patients, to insurance companies, mentioning specific cases. The matter was referred to the Council.

The meeting recessed at 11:10 p. m.

HOUSE OF DELEGATES

Reconvened Meeting

Monday Morning, May 3, 1937

The Credentials Committee reported twenty-nine members present.

The Necrology Report, which was submitted by Dr. Olga Hanson, was adopted.

NECROLOGY REPORT

MEMBERS

Richard Olding Beard, Minneapolis. Born 1856. Northwestern University, 1882. Died August 14, 1936. Aged 80.
 John E. Campbell, South Saint Paul. Born 1875. University of Minnesota, 1901. Died November 24, 1936. Aged 61.
 Ethelbert O. Cosman, Minneapolis. Born 1860. Cincinnati College of Medicine and Surgery, 1885. Died March 20, 1937. Aged 77.
 John B. Darling, Saint Paul. Born 1859. Rush Medical College, 1882. Died November 10, 1936. Aged 77.
 Louise Marie Gerber-Dietmeir, Jasper. Born 1866. University of Minnesota, 1893. Died July 2, 1936. Aged 70.
 William M. Dummer, Fairfax. Born 1887. Northwestern University, 1918. Died February 2, 1937. Aged 50.
 Frederick A. Erb, Minneapolis. Born 1873. University of Minnesota, 1902. Died October 25, 1937. Aged 63.
 Erwin W. Exley, Minneapolis. Born 1897. University of Minnesota, 1925. Died May 22, 1936. Aged 39.
 Peter M. Fischer, Shakopee. Born 1879. Detroit College of Medicine, 1907. Died September 29, 1936. Aged 56.
 David Simon Fleischhauer, Wabasha. Born 1877. Cornell University, 1897. Died October 14, 1936. Aged 59.
 Monroe M. Ghent, Saint Paul. Born 1870. Rush Medical College, 1901. Died May 6, 1936. Aged 66.
 Eugene Kibbey Green, Minneapolis. Born 1870. University of Minnesota, 1903. Died January 22, 1937. Aged 67.
 Willard P. Greene, Minneapolis. Born 1871. University of Michigan, 1904. Died November 29, 1936. Aged 65.
 Charles A. Houston, Park Rapids. Born 1876. University of Minnesota, 1901. Died October 30, 1936. Aged 60.
 Louis D. Hughes, Minneapolis. Born 1888. University of St. Louis, 1909. Died October 23, 1936. Aged 48.
 George T. Joyce, Rochester. Born 1879. University of Illinois, 1904. Died March 29, 1937. Aged 58.
 R. Roy Kennedy, Minneapolis. Born 1883. Milwaukee Medical College, 1911. Died November 7, 1936. Aged 53.
 Carl G. Kroning, Saint Charles. Born 1905. University of Minnesota, 1932. Died February 22, 1937. Aged 31.
 Antoine A. Laurent, Minneapolis. Born 1882. University of Minnesota, 1911. Died October 21, 1936. Aged 54.
 Seymour R. Lee, Saint Paul. Born 1899. University of Illinois, 1927. Died August 10, 1936. Aged 37.
 Oscar E. Locken, Crookston. Born 1891. University of Minnesota, 1920. Died January 18, 1937. Aged 45.
 Eugene G. McKeown, Pipestone. Born 1881. University of Minnesota, 1909. Died October 20, 1936. Aged 55.
 Joseph G. Mayo, Rochester. Born 1902. State University of Iowa, 1927. Died November 9, 1936. Aged 34.
 Henry T. Nippert, Saint Paul. Born 1868. Miami Medical College, Cincinnati, 1891. Died July 4, 1936. Aged 68.
 Henry S. Plummer, Rochester. Born 1874. Northwestern University, 1898. Died December 31, 1936. Aged 62.
 Alex. Ridgway, South Haven. Born 1855. Minneapolis College of Physicians and Surgeons, 1894. Died April 3, 1937. Aged 81.

George Steven, Byron. Born 1879. Rush Medical College, 1903. Died November 15, 1936. Aged 57.
 Edwin O. Swanson, Saint Paul. Born 1891. University of Minnesota, 1917. Died March 29, 1936. Aged 45.
 Harper M. Workman, Tracy. Born 1855. Northwest University Medical School, 1878. Died October 8, 1936. Aged 81.

FORMER MEMBERS

Roy W. Allen, Rochester. Born 1880. University of Iowa, 1904. Died April 27, 1936. Aged 55.
 Floyd W. Burns, Saint Paul. Born 1876. University of Chicago, 1902. Died January 20, 1937. Aged 60.
 Harry Cannon, San Diego. Born 1872. Washington University, 1904. Died March 23, 1936. Aged 64.
 William M. Cory, Waterville. Born 1858. Died February 5, 1937. Aged 78.
 Andrew O. Flom, Chicago City. Born 1886. University of Minnesota, 1912. Died October 28, 1936. Aged 50.
 Herbert D. Jenckes, Pipestone. Born 1853. Physicians Surgeons College, Chicago, 1884. Died May 18, 1936. Aged 83.
 Guel G. Morehouse, Owatonna. Born 1876. Bennett College, 1902. Died September 2, 1936. Aged 60.
 Henrik K. E. Nissen, Minneapolis. Born 1864. Royal University of Oslo, 1888. Died May 7, 1936. Aged 72.

Dr. R. V. Williams brought up the question of compensation to the physician for chest x-rays taken of positive reactors to the Mantoux test and sent to the tuberculosis sanatorium for interpretation. He felt that the fee of \$1.00 is not sufficient to cover cost. This matter was turned over to the Committee on State Health Relations.

REPORT OF THE COMMITTEE TO STUDY THE FUNCTIONS OF COMMITTEES

Dr. C. B. Wright, chairman, reported that his Committee has worked for two years on the revision of the Constitution of the Minnesota State Medical Association, the purpose for which the Committee was created in 1934. The revised Constitution and By-Laws have outwardly gone through a transformation but fundamentally there are very few vital changes and those that have been made are in a large part cutting down, re-arranging and bringing up-to-date the former Constitution.

The revised Constitution and By-Laws were printed in MINNESOTA MEDICINE and copies sent officially to component societies. At this time the Committee is presenting for adoption the Constitution as presented to the House of Delegates in May, 1936, with Amendments which have been referred in detail to the Reference Committee and to the president, and also the revised By-Laws.

The report was adopted and it was moved, seconded and carried to consider and approve each Article individually. Each Article was therefore approved and adopted without further change. The By-Laws were also presented at this meeting, which was a continuation of the May 2 meeting, so that they could be adopted at the May 3 meeting.

It was moved, seconded and carried that the Article of Incorporation be changed by the Council to comply with the present Constitution.

The meeting then adjourned.

HOUSE OF DELEGATES

Fourth Session

Monday Evening, May 3, 1937

The fourth session of the House of Delegates convened at 6:20 o'clock Monday evening, May 3. Secretary Meyerding called the roll and fifty delegates responded.

A summary of the minutes of the previous meeting was given by the secretary and adopted. Dr. George

rl, chairman, presented the report of the Council
eting.

REPORT OF THE COUNCIL

The third session of the Council convened at 11:50
m., Monday, May 3. Minutes of the second session
re read.

A resolution was proposed to be given to the House
Delegates with reference to the Herman M. Johnson
emorial Trust Fund.

Dr. J. T. Christison and Dr. E. A. Meyerding
re nominated to succeed themselves as delegate
d alternate, respectively, to the American Medical
society. These nominations were to be presented
the Council.

A resolution of the Hennepin County Medical
ciety regarding venereal disease clinics was read,
d the organization of a venereal disease clinic in
kota County was discussed. A communication from
rgeon General Parran on the report of the Com-
tee on Syphilis and Social Diseases was read.

The question of county and state sanatoria admit-
tients from outside the state for treatment was dis-
ssed by Dr. Callahan of Pokegama and Dr. Hilleboe
the Board of Control. The matter has been re-
rred to the State Board of Control which has been
quested to discourage the admission of out-of-state
berculous patients in any tax-supported state sana-
rium which is in competition with the private practice
medicine.

Approval was given the policy adopted by the Radio
ommittee on future broadcasts and also to the re-
esher courses to be sponsored by the State Board of
ontrol.

The meeting adjourned at 1:15 p. m.

* * *

Dr. J. M. Hayes then presented the following reso-
tion:

"It is the consensus of opinion of the Council of the Minne-
ta State Medical Association that the medical profession of
e State of Minnesota shall coöperate with the United
ates Public Health Service, the Minnesota State Board of
ealth and the various local and municipal boards of health
the national and state program for the control of venereal
eases.

"It is recommended that uniform standards of examination
d treatment be established on a state-wide basis under the
rection of the Committee on Syphilis and Social Diseases of
the Minnesota State Medical Association in cooperation with
e United States Public Health Service, the Minnesota State
oard of Control and various local and municipal boards of
ealth.

"It is also suggested that adequate surveys be made of
e existing facilities and that supplementary aid from the
ederal Government or the State of Minnesota and other
overnmental divisions be contributed to existing agencies
ther than for the purpose of establishing new clinics and
ealth centers for the diagnosis and treatment of venereal
eases.

"It is further suggested that local county medical societies
all be responsible, in the development of new clinics and
ealth centers, for the diagnosis and treatment of venereal
eases when inadequate facilities exist. The members of
e county medical society in a given county may designate
censed practitioners of medicine to conduct examinations
d administer treatment in the control of venereal diseases of
ose persons financially unable to provide the same. From
available funds, such physicians conducting such examinations
d administering such treatment shall be paid a reasonable fee
r their professional services."

This resolution was adopted.

Dr. J. C. Hultkrans, chairman of the Reference Com-
mittee on Constitution, gave the report on the By-

Laws, indicating various changes. The By-Laws, as
corrected, were adopted.

The following officers were elected:

PresidentJ. M. Hayes, Minneapolis
First Vice PresidentW. R. McCarthy, St. Paul
Second Vice PresidentB. A. Smith, Crosby
SecretaryE. A. Meyerding, St. Paul
TreasurerW. H. Condit, Minneapolis
Speaker of the House of Delegates.....W. W. Will, Bertha
Vice Speaker of the House of Delegates.....
J. C. Hultkrans, Minneapolis

Councilors:

Third DistrictB. J. Branton, Willmar
Fifth DistrictG. A. Earl, St. Paul
Sixth DistrictC. A. Stewart, Minneapolis
Seventh DistrictE. J. Simons, Swanville

Delegates to the American Medical Association:

J. T. Christison, St. Paul.....(Delegate)
E. A. Meyerding, St. Paul(Alternate)

The following resolution was presented and adopted:

"WHEREAS, Almighty God did remove from our midst on
the 18th day of June, 1935, one of the outstanding members
of the medical profession of the State of Minnesota, Dr.
Herman M. Johnson of Dawson, whose work and achieve-
ments are known to all of us in the present generation, and

"WHEREAS, It is the wish of many members of the
medical profession of this state to perpetuate Dr. Johnson's
memory so that those who will practice medicine in years
to come in the State of Minnesota will be able to under-
stand, appreciate and continue the work that has been done
to raise the standards of medicine and to reduce quackery
to a minimum, thereby adding to the health and welfare of
the people of this state, and

"WHEREAS, Contributions have been made by friends of
Dr. Johnson throughout the State of Minnesota, to effectuate
this purpose, now therefore, be it

"RESOLVED by the Minnesota State Medical Association,
through the House of Delegates, that the money so con-
tributed in the past, and to be contributed in the future, be
and the same hereby is set apart irrevocably, for all time, in
a trust fund, the principal thereof to forever remain intact and
interest therefrom to be reinvested in the fund or to be used
to establish and maintain suitable memorial as the Council
of the Minnesota State Medical Association shall direct. The
aforesaid moneys to be invested and the interest therefrom
to be expended by order of the Council of the Minnesota
State Medical Association."

The Reference Committee on Medical Education
Reports recommended the adoption of Section 8 of the
report of the Committee on Syphilis and Social Diseases
as follows:

"8. The availability of hospital beds for treatment of cases
needing hospitalization.

"Recommendations:

"1. Demand that indigent patients and recommend that
all patients with acute and infectious syphilis be hospitalized.

"2. All hospitals supported by public funds be required to
furnish beds for such purposes."

With the understanding that this has reference to
general hospitals only, the section was adopted.

Resolutions were adopted thanking the hotels, the
Twin City newspapers, the Saint Paul Association of
Commerce, the Ramsey County Medical Society, Wo-
men's Auxiliary, radio stations, Boy Scouts, the Police
Department and other organizations and persons who
coöperated in making the meeting a success.

President Adson expressed his appreciation of the
honor of serving as president during the year. A
rising vote of thanks was extended to Secretary Meyer-
ding and his staff for their work in connection with
the meeting.

The meeting adjourned at 7:35 o'clock.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

SYNOPSIS OF GYNECOLOGY. Based on the Textbook, Diseases of Women. Second edition. Harry Sturgeon Crossen, M.D., F.A.C.S., Professor Emeritus of Clinical Gynecology, Washington University School of Medicine, etc., and Robert James Crossen, M.D., Assistant Professor Clinical Gynecology and Obstetrics, Washington University School of Medicine, et cetera. 247 pages. Illus. Price, \$3.00, flexible binding. St. Louis: C. V. Mosby Co., 1937.

SYNOPSIS OF DIGESTIVE DISEASES. John L. Kantor, Ph.D., M.D. Associate in Medicine, Columbia University, et cetera. 302 pages. Illus. Price, \$3.00, flexible binding. St. Louis: C. V. Mosby Co., 1937.

CONCEPTS AND PROBLEMS OF PSYCHOTHERAPY. Leland E. Hinsel, M.D., Professor of Clinical Psychiatry, College of Physicians & Surgeons, Columbia University, Assistant Director New York State Psychiatric Institute and Hospital. 199 pages. Price, \$2.75, cloth. New York: Columbia University Press, 1937.

TEXTBOOK OF SURGICAL NURSING. Henry S. Brookes, Jr., M.D. Instructor in Clinical Surgery, Washington University School of Medicine, etc. 636 pages. Illus. Price, \$3.50 cloth. St. Louis: C. V. Mosby Co., 1937.

THE TECHNIC OF LOCAL ANESTHESIA. Sixth Edition. Arthur E. Hertzler, A.M., M.D., Ph.D., LL.D., F.A.C.S. Professor of Surgery, University of Kansas; Surgeon to Halstead Hospital, Halstead, Kansas, et cetera. 284 pages. Illus. Price, \$5.00, cloth. St. Louis: C. V. Mosby Co., 1937.

HEART FAILURE. Arthur M. Fishberg, M.D. Associate in Medicine, Mount Sinai Hospital, New York. 788 pages. Illus. Price, \$8.50, cloth. Philadelphia: Lea & Febiger, 1937.

PHYSICAL DIAGNOSIS. Don C. Sutton, M.S., M.D., Associate Professor of Medicine, Northwestern University School of Medicine; Attending Physician and Chairman of Medical Division, Cook County Hospital, et cetera. St. Louis: C. V. Mosby Co., 1937.

LABORATORY DIAGNOSIS OF SYPHILIS. Harry Eagle, M.D. Past Assistant Surgeon United States Public Health Service, Washington, D.C., Lecturer in Medicine, Johns Hopkins University Medical School, Baltimore, Md., et cetera. 440 pages. Illus. Price, \$5.00, cloth. St. Louis: C. V. Mosby Co., 1937.

MORTALITY TRENDS IN THE STATE OF MINNESOTA. By Calvin F. Schmid. 335 pages. 8 vo. 95 charts. Planographed. \$3.50. University of Minnesota Press, 1937.

A comprehensive, up-to-date statistical study of death rates (mainly from 1910 to 1935) according to the principal causes of death among various classes of people. Special chapters on the seasonal variation and geographical distribution of mortality, and on infant and maternal mortality.

THE THYROID AND ITS DISEASES. J. H. Meyer, M.D. 602 pages. Illus. \$6.00. Philadelphia: Lippincott, 1937.

This book, based on a large experience in thyroid work, not only clinically but in the experimental and philosophical field as well, presents a thorough yet concise review of the entire field of thyroid disease. Diagnostic measures, treatment of the various types are completely discussed, and that ticklish matter surgical judgment "When and when not to operate", admirably presented. For those who feel that monographs on individual subjects are preferable to chapters in the systems, this book will find an indispensable place on their shelves.

C. H. MATTSON, M.D.

THE 1936 YEARBOOK OF GENERAL MEDICINE. 848 pages. \$3.00. Chicago: The Year Book Publishers, 1936.

This is a comprehensive volume of papers on general medicine published in 1936, and affords a valuable means for the doctor to catch up on what has been going on during the past year. The best part of the book is made up of the editorial comments on the various articles, for there one finds the evaluation of the material published.

HARRY OERTING, M.D.

OPERATIVE SURGERY. 4th ed. J. S. Horsley, M.D., Sc.D., F.A.C.S., and Isaac A. Bigger, M.D. 1,387 pages. 2 vols. Illustrated. Price, \$15.00. St. Louis: C. V. Mosby Co., 1937.

The first edition of this book was published in 1901 in one volume containing 721 pages, with 613 illustrations by Miss Helen Lorraine. The author stresses the "preservation of physiologic function and the interpretation of the biologic processes that follow surgical operations." No attempt was made to include descriptions of surgical operations; only those were described or discussed that the author had either performed or else appeared to him to be especially suitable. It was therefore a narrative of the author's own experience and ideas; an excellent book of a type that is regrettable disappearing rather rapidly. The fields of general medicine and of general surgery have become so elaborate and the various specialized branches so complete themselves that an inclusive monograph by one writer has become impossible. All books on general medicine and surgery must now be encyclopedic.

This is what has happened to Horsley and his work. In preparing this, the fourth edition, after a period of sixteen years from the first, he finds that the effort has outgrown his capabilities. "Then," he says, "I was working, at least to some extent, in urologic, orthopedic, plastic and neurologic surgery, as well as in so-called general surgery, and that edition was largely a record of my personal experience. . . . In recent years, however, the specialties in surgery have become so distinct and aggressive that the general surgeon's field has necessarily contracted," and so on, as outlined above.

So he explained his plight to the publishers, who yielded to his argument and consented that he secure

collaboration of I. A. Bigger, Professor of Surgery at the University of Virginia, who contributed the chapters on "surgery of the neck, thorax, breast, heart, sympathetic nervous system and some of the operations upon the extremities."

C. C. Coleman, neurosurgeon in the same institution, writes on surgery of the central nervous system and cranial nerves; A. I. Dodson, Professor of Urology at the Medical College of Virginia, on urology; J. S. Orsley, Jr., on plastic surgery; Donald M. Faulkner on orthopedics; and G. W. Horsley, although a general surgeon, on proctology.

The result is a modernized and comprehensive work in two volumes, with 1,387 pages in all, and 1,259 illustrations by the original artist, Miss Lorraine. It retains much of the charm of the original edition, for Horsley's personality is evident throughout, but it is going the way of Osler, Jacobson and others. The accretions of modernity are erasing the footprints of the master.

GILBERT COTTAM

DIGEST OF TREATMENT. Monthly publication. Volume 1, Number 1, July, 1937. Philadelphia: J. B. Lippincott Co.

Volume 1, Number 1, of this new non-advertising monthly digest of treatment appeared July 1. As its name signifies, each volume is to contain a digest of articles on treatment appearing in current medical literature. The editorial staff consists of specialists in the various branches of medicine, with George E. Rehberger the general editorial advisor. The thirty-four indexed abstracts appearing in the first number of this new journal are well chosen.

The subject of treatment has perhaps received less emphasis generally than it deserves. A condensed summary of experiences in treatment, both favorable and unfavorable, as culled from some 200 medical journals, could be welcomed by members of the profession.

C. B. D.

NEW AND NON-OFFICIAL REMEDIES, 1937. Containing Descriptions of the Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1937. Cloth. Price, \$1.50. Pp. 557, LXIV. Chicago: American Medical Association, 1937.

The annual editions of this volume contain all that the busy physician needs to know concerning the newer preparations which he is daily importuned by the detail men of the pharmaceutical manufacturers to use. The remedies listed and described here have been examined and found acceptable by the Council on Pharmacy and Chemistry, the deliberative body charged by the American Medical Association with the performance of this service for the practitioner, who has not the time or means to make the determinations for himself.

Some new drugs have been added in the 1937 edition, the descriptions of which will be found in the groupings to which they belong. There are some noteworthy changes in classification. The various vaso-con-

strictors, Benzedrine, Ephedrine, Epinephrine and Neo-Synephrin, have been grouped together as phenylalkylamine derivatives under the heading "Epinephrine and Related Preparations." This terminology is in keeping with the Council's policy of avoiding therapeutically suggestive names. Another similar change is the abandonment of the classification "Medicinal Foods" and substitution of a chapter under the title "Vitamins and Vitamin Preparations for Therapeutic and Prophylactic Use" in the previous edition. The consideration of other classes of food preparations was long ago transferred to the Council on Foods. The chapter "Organs of Animals," which has heretofore included only endocrine preparations, has been expanded by transfers to this heading of the chapters Liver and Stomach Preparations, and Insulin.

The book contains general articles, descriptive of the classification under which the various drugs are listed. According to the preface, more or less thoroughgoing revisions have been made of the articles: Arsenic Compounds; Compounds Containing Trivalent Arsenic; Compounds Containing Pentavalent Arsenic; Bismuth Compounds; Epinephrine and Related Preparations; Iodine Compounds; Iodine Compounds for Systemic Use; Mercury and Mercury Compounds; Pituitary Gland; Salicylic Acid Compounds; Serums and Vaccines; Antipneumococcal Serums; Silver Preparations; Tannic Acid Derivatives.

TREND OF MATERNAL MORTALITY IN MINNESOTA

(Continued from page 528)

ternal care. Those who are responsible for government and state vital statistics can attest the value of accurate data. In Minnesota, through the coöperation of the State Medical Association, the Medical Department of the University and the State Department of Health, there have, for a number of years, been carried on extension courses in obstetrics as well as in other medical subjects. For years the Minnesota Division of Child Hygiene has carried on an educational program chiefly through demonstrations to the laity by public health nurses. During the past winter there has been organized a special type of refresher course in obstetrics and pediatrics by which interesting and instructive discussions can be carried to the general practitioner in his locality. This course of talks, six of which will be given in as many localities, includes ones on puerperal infection, antepartum care, toxemias of pregnancy, obstetrical hemorrhage, mechanism of labor and pelvic contraction. One lecture is given each week for six weeks and is preceded

or followed by a lecture on a pediatric subject. Each lecture is followed by dinner, at which a question conference is held.

Such efforts are of distinct value in raising the standards of obstetrical and neonatal care. Are they sufficient to make any appreciable advance toward the intelligent and conservative practice of obstetrics unless those who are known to be devoting special attention to obstetrics are also practicing conservative obstetrics?

As individual obstetricians and as a group we are in favor of the relief of pain in obstetrics commensurate with the safety and future health of mother and baby. We desire for our patients ample relief of pain but with a minimum of danger. There is a trend toward complete relief of pain during labor which inevitably means an increased number of operative deliveries. Operations which are comparatively safe and simple under certain conditions may be dangerous under less favorable conditions. Another trend is toward the reduction of the duration of pregnancy by the induction of labor, commonly by artificial means. This, as well as the practice of shortening labor by drugs or operative delivery for convenience, cannot fail to increase the risk to the mother and child if commonly adopted.

CLASSIFIED ADVERTISING

FOR SALE—Medical practice which specialized in Eye, Ear, Nose and Throat. Library, instruments, and office equipment located in western Minnesota county seat, 3,000 population. Amos Leuty, M.D. (estate), Morris, Minn.

LABORATORY TECHNICIAN, June graduate, desires position. Address Erna Miller, 2820 Riverside Avenue, Minneapolis. Telephone Br. 3611.

PRACTICE FOR SALE—In South Central Minnesota. For details address D-372, care MINNESOTA MEDICINE.

MALE HELP WANTED — Salesmen wanted for Surgical Supply House. Familiarity with line preferred, but not essential if willing to study and improve. Must be worker who is looking for permanent connection. Address D-373, care MINNESOTA MEDICINE.

WANTED—Physician; percentage and salary. Southern Minnesota. Recent graduate, married, Protestant, able to speak German. Address D-374, care MINNESOTA MEDICINE.

WANTED—Doctor (preferably with morning office hours) to share space in Medical Arts Building, Minneapolis, with present occupant. Address D-375, care MINNESOTA MEDICINE.

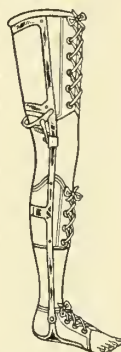
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MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society.

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September, 1937

Number 9

THE DOCTOR LOOKS AT SOCIAL SECURITY*

MAXWELL LICK, M.D.

Erie, Pennsylvania

I REGARD it a signal honor to be invited to address the Medical Society of the State of Minnesota. At this time I should like to extend to you cordial greetings from the Medical Society of the State of Pennsylvania, which I have the privilege of representing.

Would that it were given me today to carry before you a fiery cross! Would that it were given me wisdom to solve some of the perplexing problems that confront the Medical Fraternity! If you find nothing of constructive thought in what I present to you, perhaps you may catch some inspiration that will help us all hold steadfast and faithful to the ideals and traditions of medicine. If this be true, then I shall have accomplished all that lies within my ability.

Health has become a ruling passion. It is a word with which to conjure. Sickness used to be an episode which concerned the patient, the relatives, and the family physician. Now it has the solicitude and surveillance of the economist, the philanthropist, and the politician.

Increase of Public Interest in Health

The public has become hysterical with repeated journalistic and radio impacts; much of it senseless, worthless, reasonless advice on how to attain health and prevent sickness. Millions of radios daily blare forth the necessity of this and that "vitalized" remedy. Papers and magazines blatantly expound the merits of one medicine after another. Cults, with their laying-on of hands and electrical gadgets, predict restoration of youthful vigor. Physical culturists, with their bulging muscles, prophesy charm and renewed vitality. Diet faddists herald a fresh hope to the weary with their unscientific combinations of food. One oracle after another rises up with

heteroscopic divinations of that for which Ponce de Leon sought. Now the economists, the philanthropists, and the politicians have taken up the cry. This insensate, frenzied emphasis on health has confused the lay-mind and resulted in much unintelligence, because emphasis has been laid on spectacular and unimportant details. It is a psychological law that uncontrolled thought and emphasis may result in obsession. Perspective may be lost.

Unemphasized Health Factors

"As manna fell upon the Israelites in their wanderings through the wilderness, so does good health and sickness, in spite of laws, rules, and regulations, fall inexorably upon the just and unjust alike." Granting the beneficence of preventive medicine, hygiene, and sanitation, the greatest single factor of good health and longevity lies in tissue resistance. It is that ill-defined something which was given to us by our progenitors.

It is an inescapable fact that many are predestined to diabetes, pneumonia, cancer, mental and cardiorenal diseases. These diseases have varied little, if any, and some of them have increased, and this in the face of scientific medicine. Within this group are the greatest of killing diseases. Their control, management and eradication are certainly not within the province of any form of State medicine! To affirm that they are is to show a fundamental misunderstanding of the problems involved. This misconception lies in the belief that because we have invented skillful diagnostic apparatus, improved and perfected their therapeutic application, erected imposing hospitals, delved into the function and physiology of hidden and obscure glands, and perfected surgery to a high art—all this need only be applied wholesale and indiscriminately to

*Read before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 4, 1937.

the public at large, to attain perfection in health for everyone. It is the typical American point of view of interpreting life in terms of size and numbers, rather than in terms of quality and intellect.

The understanding of some of these problems lies in the study of heredity and hereditary influences. Their solution will never come from legislators or politicians, but rather by a knowledge of genetics; by proper mating; by adherence to well-known biological laws; by preventing the unfit from propagating; by relieving economic anxiety; by making leisure, calmness and complacency a habit, rather than excitement and confusion. Peace of mind cannot result if the specter of poverty is ever present. Much of the unhappiness in the world today is due to unrest; to the dissatisfaction of our status in life; to the desire for that which our neighbors have, the acquisition of which only gives us a fresh starting place for something more. It is the siren song of modern life, hurry, hurry, hurry! Just so long as modern living, with its killing competition, with its envy and greed, with its excitement and restlessness, exists, just so long will we have manifestations of nervous and cardiovascular diseases. No amount of health legislation will ever make any difference. The causes here are economic. Heredity and environment influence to large extent our health and longevity.

Prevalence of Superstition and Ignorance

There is still in the minds of the public at large much superstition, also, regarding sickness and its cure. In early days (and not so far back either, for witches were hanged in New England) sickness and pain were regarded as a visitation from an angry God, or possession by an evil spirit. These afflicted people rushed terror-stricken to the priest, the chief, and the medicine man for prayers, sacrifices, incantations, and fetishes, fully believing that if the proper rite were performed, relief would speedily come.

The parallel of this is seen in our abhorrence of the number 13, the carrying of lucky charms, and the bringing of pebbles from Callander. It has its counterpart in the firm belief that if one only finds the right doctor, he will get the right medicine to effect a cure. It is identical in spirit with those who seek out for treatment the cults who practice the laying-on of hands, and the ap-

plication and display of mysterious electrical appliances and other doo-dads. That which is indiscernible and oracular is impressive and implies occult powers. It is, therefore, apparent that we do not have to go back to the dark ages, or to the beginning of medicine, to find ignorance and superstition.

It is human nature to be complacent about health until there is pain or disability. The sick-bed usually is occupied before help is sought. Even then, there is a widespread confidence in self-treatment, faith cures, divine healing and patent medicines. Irresponsibility, ignorance, superstition, stupidity, lack of foresight and thrift are fundamental human defects, which no amount of legislation will ever correct with any greater degree of success than prohibition stopped drinking.

If these things are true, there is a dire and crying need for better understanding of fundamental conditions. There is a tremendous need for public education. Let fear, ignorance, and superstition be banished so that logical and intelligent methods can be applied to the sick and to the improvement of the race.

By implication and assertion, the medical profession has been placed in a false and defensive position. It has been made to appear that our services are denied to a large number and that much of our skill and therapeutic agencies are rusting from disuse. We are accused of being a guild, a union, smugly withholding our services except to those who can pay. By habit, custom and tradition, our profession has carried on its work without ostentation. Hippocrates bound his students to remain silent by virtue of the intimate character of their work. Because of this established attitude, which I deem essentially right, we have until recently left unchallenged this storm of criticism, implication and innuendo.

The public is told that thousands suffer and die from lack of medical care. I need not tell you, my friends, that the state of health in this country is on a higher plane than at any other time in its history. I need not point out that sickness and death are immeasurably less here than in other countries of comparable size. I need not affirm that our efforts in preventive medicine have resulted in the control and almost the eradication of certain diseases, so that statisticians tell us they will eventually be found only on the pages of history. I need not inform you

that the medical profession has performed its duty to the needy, completely, without reservation or complaint, during the unprecedented years of the depression.

I need not authenticate that many people—a large number—never do need any medical attention. Of course, many have chronic defects. Many of you in this audience have chronic ailments of a minor degree which in no way materially affects your general health. The correction of these is entirely a matter of your own volition. If doctors' offices dotted the landscape like the ubiquitous billboards and gasoline stations and the services were all free, the public still would not seek attention for chronic defects.

The fact is that medical service can be had by any who have interest, volition, and intelligence enough to seek it. I need not establish that coercion by law is contrary to human nature. Irregular practitioners will find favor with multitudes in preference to doctors as long as ignorance and superstition dwell in the human mind, leaving in their wake, tragedy, suffering, incurable diseases, disappointments, and frustrated hopes, while the coffers of those who lawfully exploit human suffering and credulity, bulge with their ill-gotten gains. What a paradox it is that doctors of medicine must by law conform to exacting and meticulous standards, while the others, without knowledge, without cultural or scientific training, may practice the healing art, with their unscientific and even more ridiculous methods! The laws of our glorious republic safeguard this wonderful body of ours from the ministrations of the doctor, but hand it over with confidence, childlike simplicity and innocence, to the depredations of any one who calls himself a healer. By any stretch of the imagination is there any reason or logic in such solicitude on the one hand, and such utter indifference and unrestraint on the other? It will be a blessed day for the public when all who practice the healing art, no matter by what method, are compelled to submit to the same training, and conform to the same standards. It should make no difference whether drugs are used, diets offered, or surgery practiced. Ignorance, delay and improper practices have transformed many curable cases into hopeless invalidism. Legalized murder certainly exists elsewhere than within prison walls and on the fields of glory. I emphasize all this because health insurance takes

no cognizance of these evils and their pernicious effects.

The public, because of general unintelligence and susceptibility to advertising, believes implicitly in a specific cure for all ailments. The patient regards his "indigestion" as a distinct entity, separate from relationship to the rest of his body. The doctor knows that the body and its ills must be considered as a whole, and not that alone, but must be envisioned for complete understanding in relationship to its environment and heredity. Ambitions, hopes, disappointments, envy, greed, jealousy, suppression—all these color the canvas, portraying the picture of personality. They are currents which may lead this frail craft, not only to peaceful, placid waters of complacency and stability of mind and body, but also may dash it on the jagged rocks of mental and physical disaster. Is there any likelihood that these evils will be corrected by any pattern of medical reform? Do we not need more education and less legislation?

Influence on Medicine of Changing Political and Economic Concepts

In order to understand the agitation to make over the medical profession, one has only to take cognizance of the radical trends of thought throughout the entire world. Has the world been made "safe for democracy"? Is it indeed not quite the opposite? We have seen democracy demolished and in its place have come Fascism, Communism, and Nazism. Political and governmental conduct has been radically changed. There has been a tendency, the world over, towards ascendancy of the State, with the result that the effort of the individual has been less effectual and less fruitful.

It has been affirmed, by those more eloquent than the speaker, that this country was formed and developed by our forbears who fled Europe to escape the omnipotence of the King and the evils of an autocratic group, that they might enjoy freedom of thought, speech and action. All history proves that the greatest of civilizations and cultures were those developed where the individual was paramount. Greece reached its greatest heights in the time of Pericles, Plato, Socrates, and Aristotle. The Renaissance in Italy and England was the result of an exuberance of individual expression. France began its greatest glory when the Bastille was stormed and

the heads of the civil and dominating group fell into the bloody baskets. Freedom of religious thought and belief was only attained when the people rose up and purged the nations. The thorny path led Copernicus to banishment, Servetus and Savonarola to the burning stake, and many other individuals to the dagger and the rack because they raised their voices in protest against the dominance of an unfair and unjust group.

You say these are unfair parallels. You say such things cannot happen here. They have happened in this twentieth century in Europe. Great scientists have been banished and made fugitives. Illustrious physicians have been denied the right to practice. Scientific knowledge of great value has been refused publication, while other scientific books have been destroyed. Liberty, freedom of speech, thought, and action have undergone decay in many Continental countries. The state is all-supreme! Conscience is dulled and suppressed!

Our own country has not escaped the influence of these currents of thought. We see increasing governmental interest in civil and industrial activities. These new concepts have created a doubt in the worth of our traditional sanctions and have shaken the confidence in our established institutions. Is not the attack and the diligent program of discrediting the medical profession only an example of the powerful economic forces exhibited in all human activities? Has not the unrest and the uncertainty of economic forces filtered and permeated all phases of human endeavor? One heard little of socialized medicine until the depression devastated the business and morale of our citizens. Now it would appear as though most of the ills of humanity could be laid at the door of the medical fraternity. There were no grounds for complaint until this economic confusion occurred. It is inevitable, in times of crisis and despair, for self-appointed evangelists, imbued with a sudden burning and consuming humanitarian thirst, to rise up and lead the discouraged, who, with outstretched arms, stumbling feet and eager faces, follow with childlike trust as did the children after the Pied Piper, only to find disillusionment and frustrated hopes. The magic prescriptions of these modern soothsayers and social astrologers seem strangely reminiscent of the

"shot-gun" mixtures of our own twilight medicine!

Tragedy and economic crises result in a dislocation of logic and of our established concepts. We lose sight of fundamentals and grasp at plans and panaceas, especially if they are prophetic and sanctimonious. Human nature has ever been thus. The facts of life are often stark and cruel. It is human nature to seek comfort, solace and relief from actualities. Therein lies the lure of drugs and alcohol with their comforting and exalting effects. In like manner we eagerly seek "the promised land" of social and economic problems, soothed into intellectual anesthesia and expansive well-being by the breath-taking beauty of the vision. The best social insurance that I know of is work—work that pays a good wage, work that stimulates incentive, encouraging thrift and frugality, work that rewards the worker in proportion to his honest effort, work that provides independence and liberty and opportunity to purchase medical service, when it is needed and from whom it is desired. I challenge the statement that we need to change some of our institutions! Honesty, thrift, integrity and sanity of outlook are still fundamental. Patronage and dependence are likely to undermine the character and breed laziness, insolence and revolution. Economic crises, ravages of flood, famine and drought, have existed since the beginning of time. They are inexorable and inevitable. The silent machinery, the smokeless chimneys, the red entries in the ledger, poverty and tragedy, are stark symbols of man's impotence against natural and economic forces. Can it be denied, then, that this attack on medicine is a symptom of the times? Is it not analogous to the treatment of a cough when the patient has pneumonia? Do we not have the cart before the horse? In our bewilderment we often seek the easiest explanation of truth. "One may dive too deep or soar too high and the truth escapes." The medical profession has no cure for the ills of the body that are dependent upon the ills of society. Should we not hold steadfast to those established institutions which have stood the test, regardless of failing confidence and economic confusion? Should we not cling unwaveringly to individualism in medicine until the wheel turns again, when sanity, work and thrift will be fundamental?

The Art of Medicine

The practice of medicine is largely an art. Music, poetry, painting, and sculpture were highly developed, and, indeed, had attained perfection when medicine was still in its crude beginning. Nike of Samothrace (Winged Victory), Venus de Milo, and the Laocoön, sculpture that has never been excelled, were produced a century or two B. C. Homer had written his *Odyssey* at a time when diseases were treated by superstitious rites, or by the giving of horrid concoctions. Chaucer had written *Canterbury Tales* two centuries before the ligature was applied to an artery to control hemorrhage. Rembrandt had painted his great picture *The Anatomy Lesson* two hundred years before Pasteur linked bacteria with disease, and Michaelangelo was spreading his canvases with infinite beauty long before this.

But I call your attention to the fact that, although the science of medicine was little if at all understood in those early days, the art of the physician was bringing sympathy, cheer, and restoration to health. Those glorious words of Hippocrates, transcending most human attributes, illustrate the constant guiding principle. Love to contemplate them, "I will follow that method of treatment, which according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. With purity and with holiness I will pass my life and practice my art. Into whatever houses I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption. While I continue to keep this oath unviolated, may it be granted to me to enjoy life and practice of the art, respected by all men at all times, but, should I trespass and violate this oath, may the reverse be my lot."

No more inspired lines were ever written! No more blessed rules of conduct were ever promulgated. And, so down through the centuries, these principles have been paramount in the practice of medicine. It recognizes that often the greatest good that we bring to our patients is outside the giving of drugs.

Formerly, the doctor was the family counselor on many problems aside from that of illness. No one, not even the spiritual adviser, knew the troubles that beset the family circle better than

he. No one came closer to the inner life of the family. It was he who inspired that confidence and trust which stimulated the will to believe and to get well. It was he whose counsel was sought when trouble, trial and tribulation laid their heavy hands upon the family life. It was he who was first thought of because of his intimate knowledge of all that concerned the family, from sickness to domestic or economic difficulties. In him was placed that reliance, trust and confidence that brought in most instances peace, tranquility, and adjustment to those within the family circle. The Man of Galilee himself was called the great physician, not only for his ability to heal the sick, but also for his ascendent powers to sympathize, to encourage, to strengthen and to make the rough places plain.

The practice of medicine, however, is not the simple thing that it was in those days. There has been a tendency to regard specific diseases as separate entities. This probably has resulted in over-specialization. For complete understanding one must think of the entire organism as a personality. We as a profession are likely to fall into the same trap as those economists who would make medicine a business-like science. Their theory is predicated upon the assumption that sickness and disease can be classified in the same manner as botany specimens, and all that is necessary is to apply the cure. This is far from the truth in many instances. It is the personality, the ego, that is frequently out of adjustment with its environment. Stress and strain of economic existence and the pull of hereditary factors are at the bottom of many illnesses. This has been especially true since the depression came. Our profession has given too little thought to these ills, with the result that psychologists and psychoanalysts have supplied the need to these suffering individuals. These personalities need sympathy and friendly counsel, as does the parched field need the gentle rain. Let us give more thought and attention to the sick personality! Let there be a return to the family doctor and less specialization!

Those who talk so glibly of making over this profession of ours—this profession rich in traditions; this profession which has attained such noble worth; this profession surfeited by kindness and sympathy; this profession whose only passwords are mercy and pity—lose sight of the art of medicine. They would reduce all these

human attributes of kindness, pity and mercy, to a formula. They would put the matter on a business basis, under the assumption that only scientific medicine need be applied to the sick in order to effect a cure. What an abysmal misunderstanding of the principles involved! What gross injustice and what cruel denial would result, to many, many personalities! The art of medicine and its application must remain unchanged. Nothing must make unheard those words so often expressed by the sick, "Doctor, I'm so glad you have come." There is wrapped up in that one sentence the epitome of the medical art which has existed through the centuries. It is akin to the child who reaches out his hands to his mother and finds solace and understanding in her arms.

The art of medicine has not changed. The passwords of mercy and pity are the same today as in the days of Hippocrates and the doctor of the old school. These qualities of the human soul must not die if the art is to exist. Would you have me believe that they can be taken over by the politicians and bureaucrats? Would you have me think that they can be reduced to a business formula? Would you have me think that they can be turned on and off by a switch? I call you to witness, that this can no more be done without debasing the quality, than one can stifle the love in the human breast for its Creator, without dwarfing the soul.

Medicine an Altruistic Art

It was Alexander Pope who said, "Be not the first to try the new, nor yet the last to lay the old aside." There should be no need of saying that the medical profession, above all others, would be the first to adopt any change which would result beneficially to the public health. If this is not true, then indeed, have our traditions, our altruism, our purpose, our ethics, been a living fraud. Is it not our duty by virtue of our training and knowledge of medical problems, to protect the public from the adoption of suddenly conceived, overnight schemes which would result in the deterioration and prostitution of the medical art? Can our motives be impugned, can we justly be called selfish when we strive to maintain the finest quality of medical service in the world? Can we be reproached, can we be convicted of deceit when we oppose the control of medicine by politicians with all the inevitable

and shameful patronage and waste, in which political machinations result?

We have been called ungenerous, mercenary, illiberal, and selfish. If to teach principles of sanitation and hygiene, if to broadcast rules and programs of maintaining health, if to give free the discoveries of science resulting in the eradication of suffering and disease, if refusal to patent new remedies or to keep them hidden as a secret, if to maintain clinics and hospital wards without recompense, if to apply knowledge of preventive medicine to the wiping out of specific diseases, if constantly to diminish our private practice and business by the dissemination of all this knowledge—if all this be ungenerous—then thank God, I belong to such a selfish group.

We believe as a profession that whatever is just and right for the individual is just as right for the group. It is our habit and custom to render services to the individual at reduced fees, when circumstances deem it to be fair and right. If this principle is equitable, then it should be applied under similar needs and conditions to the group. To this end, and with the approval of our parent organizations, certain plans of voluntary hospital insurance are being tried. This seems to me to be just and proper for or of it may evolve a workable, suitable plan, free from political or other extraneous influence which will meet the major expense of hospital confining sickness for those least able to afford it. One lacks the wisdom of a sage or the temerity of the foolish to outline a definite plan of that which is still experimental.

We certainly affirm our desire of instituting any changes made necessary in view of different economic conditions. We want those innovations, however, to come gradually, to be built up solidly by trial and error. Science grows thus. An observation, a fact, a theorem, finally a proof. So with us. Let changes come by attrition. Let there be no radical stampede resulting in disappointment, retrogression and frustrated hopes. This is my answer to those of our profession who clamor and cry for a definite, militant program of our own. It would take divine wisdom to foresee the future, but it only requires common sense to keep constantly before ourselves, before the public, and before our legislators, the necessity of maintaining unsullied whatever is noble and worthy to the medical art. The only guide we have for the future is ex-

ence. Experience is largely the record of our mistakes. Lord Byron said, "The best prophet of the future is the past." There is ample evidence in events of the past of the deterioration of medicine under political influence. There has been no particular dissatisfaction of the public with the present type of medical service.

Social Insurance Not the Answer

I have considerable faith in the intelligence and motives of our legislators. I cannot believe that they, with a complete knowledge of experience in other countries with social and health insurance, would countenance any such system. I ask them and the American people whether it has strengthened and fortified governments; has it lessened poverty; has it added to individual happiness and security; has it lessened sickness and morbidity; has it lengthened life; has it done any of these things in those European countries where it is practiced? Let us not substitute rhetoric and emotion for logic. The answer is NO. There is a greater public consciousness than ever, that we are indeed "our brother's keeper." But let us see to it that he has an opportunity of keeping himself. He should have the opportunity and the right to remain independent and not become a "poor relation." If socialism is just and needed, then let us socialize everything. But, if we still believe in the principles of democracy, guaranteeing liberty in thought, speech and action, on which this country was founded, let us adhere to them with perseverance, moderation and firmness. We want none of those European systems. We do not want American medicine inoculated with the festering sores of political control; with malingering patients seeking cash benefits; with clerk-prescription writing doctors, exhibiting lack of personal interest. These are veritable cancers, seriously impairing the worth and prostituting the art of medicine. We do not want a legislation which benefits one class at the expense of another. Health insurance does not profit the clerk, the farmer, the self-employed, the domes-

tic, or the indigent. Health insurance takes no notice of the manufacturer, the executive, those whose efforts and ability give work to thousands in this country. Verily, these are blessed and forgotten souls. It would indeed be revolutionary if some one thought of protecting them when adversity struck. We do not want a tax on the already pitifully thin pay envelope of the worker; on burdened industry; and on the heavily taxed citizens of the state—a tax that is uneven in its assessment and uneven and unfair in its benefits.

We are indeed a profession set apart. We must not lose the conviction that we are dedicated to the care of the sick. Down through the ages this has been our duty. Unless we cherish a cordial habitual and immovable attachment to this heritage, something of value will be irrevocably lost. The members of the Medical Association of the State of Minnesota, with their culture and knowledge, represent an invincible force for good. I beg of you, for the public good, that you remain unified in motive and purpose, filled with enthusiasm and imbued with the justness of your cause.

A Charge to Keep

Ah, my confrères, we have a duty to the public and to ourselves. We have a charge to keep! A charge from those whose heritage we prize: those who now sleep the long sleep; those whose minds and hearts must have been akin to the Divine because of their noble motives and purposes; those whose work has shaped and directed currents of civilization and made the lot of mankind better than any statesman, warrior, or general; those who gave us the tradition of beneficent service to all who suffer; those whose love of humanity surpassed even that of the love of woman; those whose paths led to a martyr's grave that science might advance. Their spirit is not dead! Their precepts and principles, examples and teachings, will live not only on the pages of history, but in the hearts and minds of all worthy to be called physicians.

SURGICAL DISEASES OF THE PANCREAS*

With Special Reference to Cysts, Acute Pancreatic Necrosis, and Hyperinsulinism

OWEN H. WANGENSTEEN, M.D.

Minneapolis, Minnesota

AFFECTIONS of the pancreas only infrequently demand the attention of the surgeon. Of patients who suffer from diabetes because of sclerosis or atrophy of the pancreatic islands of Langerhans, however, Joslin has estimated that about half will ultimately come under the care of the surgeon because of infection or circulatory disturbances. It is the purpose of this paper to deal with the less frequent diseases of the pancreas which necessitate a direct attack upon the pancreas itself.

Congenital Anomalies

Accessory pancreatic tissue has been found in the walls of the intestinal canal from the stomach to the colon. Its most frequent aberrant position is in the wall of the duodenum. Accessory pancreas in a Meckel's diverticulum has been known to give rise to intussusception. Accessory pancreas in the mesentery of the bowel rarely gives rise to difficulties. Such accessory pancreases are usually single, but multiple accessory pancreatic bodies are occasionally found.

The annular pancreas is particularly prone to give rise to trouble. Undoubtedly a number of instances of congenital duodenal stenosis and atresia have their origin in this anomalous development of the pancreas. If the obstruction to the duodenum is incomplete, the symptoms of pyloric obstruction may only become apparent later in life. The condition may then be rectified by excision of the pancreatic tissue which overlies the anterior duodenal wall or a gastro-duodenostomy or gastro-enterostomy may be made to circumvent the obstruction.

Injury

Owing to its deep location in the abdomen, the pancreas is not readily injured. Because of its position over the spine, a severe blow in the epigastrium may divide the pancreas. The writer has once observed this occurrence attending the kick of a horse. Bullet wounds of the upper

abdomen may traverse the pancreas and this in some measure directly responsible for the high mortality attending isolated perforation of the stomach. It is to be recalled that this sequence of events took place in the instance of President McKinley. An assassin's bullet perforated both walls of the stomach and lodged in the pancreas. The holes in the stomach were sutured, but the concomitant injury to the pancreas was largely responsible for the fatal outcome. It is interesting to know that the bullet was not found in the adipose tissues of the retroperitoneal space despite a careful search extending over seven hours by a competent pathologist. The aid of the roentgen-ray was then (1901) undoubtedly available in Buffalo, but its widespread adaptation in clinical medicine was a later development.

The surgeon now and then injures the pancreas during gastric resection when an ulcer of the lesser curvature has eroded the posterior gastric wall and the stomach has become intimately adherent to the pancreas. However, under such circumstances the surgeon can choose, if he prefers, to leave a little of the gastric wall on the pancreas, destroying the gastric glands by fulguration. When a gastric cancer invades the pancreas, however, the surgeon must excise this extension if he elects to resect the stomach. The writer has had some gratifying results with the acceptance of such pancreatic injury as a part of the operative procedure in some cancers of the stomach. The experience with pancreatic resection for hyperinsulinism has taught that injury of the pancreas is fairly well tolerated if hemostasis is secure and the resected portion of the gland is embedded in omentum. This demonstrated tolerance of the pancreas to withstand traumatic insults, however, should afford no occasion to take unwarranted or unnecessary liberties with it. In performing splenectomy, the surgeon should still take great pains to avoid including the tail of the pancreas in his ligature.

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Acute Pancreatic Necrosis

How the disease entity of acute pancreatitis or pancreatic necrosis comes about is not wholly clear. Since the finding of a small gallstone at the termination of the common bile duct by Opie in 1901, it has become known that the choledochus and duct of Wirsung may be converted into a common channel through such an agency, the bile being retrojected into the pancreatic ducts. Experimentation has established the validity of the contention that pancreatic necrosis may have its origin. The number of instances, however, in which a mechanical obstruction which can cause this is found, are few. Such retrojection of bile in the presence of a common channel would therefore most likely have its origin through functional disturbances in the neurovascular mechanism of the ampullary portion of the common bile duct. Boyden has recently demonstrated quite conclusively that the sphincter of the choledochus is not at the papilla or tip of the ampulla, but lies usually about 2 centimeters proximal to the ampulla. The chief problem of the causation of acute pancreatic necrosis centers in the conversion of inactive trypsinogen into active trypsin in the pancreas itself. Normally this activation takes place in the duodenum by the physiological activator succus entericus. There are many agents which can effect this conversion *in vitro*. In the experimental animal, however, many such agents are insufficient to produce the disease when operating as single factors. The explanation of a number of instances of acute pancreatic necrosis may lie in a combination of factors which are ineffectual when operating singly. Some experiments done by Brown, even, Manson, and the writer, upon the cat, would indicate that pancreatic necrosis is more likely to follow retrojection of bile into the duct of Wirsung from the choledochus when fat was injected. Dragstedt and his associates are inclined to believe that the bile regurgitation factor will account for only a small percentage of instances of acute pancreatitis. They feel that a primary infection in the pancreas plays the more important rôle. Rich and Duff in some recent experiments stress obstruction of the pancreatic ducts as the chief etiologic agent. They believe that obstruction of the ducts permits extravasation of the glandular enzymes into the substance of the pancreas, thus producing necrosis. They state that activated trypsin pro-

duces the specific effect of thrombosis and hemorrhage no matter which tissue is concerned. Rich and Duff relate that they have observed metaplasia of the duct epithelium in the pancreas of patients dying of acute pancreatic necrosis.

Treatment of Acute Pancreatic Necrosis

It has been the writer's practice for some years to treat acute pancreatic necrosis conservatively without operative intervention. It would appear that drainage of the peritoneal cavity, drainage of the biliary tract and tamponade of the pancreas accomplish nothing specific in the control of the disease. The patient must sustain the trauma of operative intervention, which is considerable, in addition to the burden of the disease. The fluid which accumulates in the peritoneal cavity in the course of pancreatic necrosis is innocuous; drainage of the biliary tract is only of value in the presence of continued obstruction at the ampulla, and it is difficult to believe that tamponade of the pancreas will inhibit autodigestion of the pancreas—the process which threatens life. The therapy of pancreatic necrosis, it would seem, should be directed to stopping the activation of trypsin within the pancreas. The symptomatic relief of pain and intestinal distension can usually be accomplished by the application of suction to an indwelling duodenal tube and the employment of hot packs to the abdomen. Starvation is probably fully as effectual as any other known agent in interrupting the pathologic conversion of trypsinogen into trypsin within the pancreas. Lewis warns against the administration of glucose on the basis of Babkin's work, who found that hyperglycemia increased the production of pancreatic enzymes. It is difficult to believe that operation which only establishes the diagnosis but accomplishes no specific good is of any value in treatment. It has been the writer's practice to do the delayed operation after convalescence from the acute disorder. At operation, done usually about three weeks after the onset, areas of fat necrosis are almost invariably still demonstrable. Inasmuch as disease of the biliary tract is the most common concomitant of pancreatic necrosis, excision of the gallbladder and careful examination or exploration, if indicated, of the common duct are in order. Latterly the writer has not advised delayed operation after recovery

from the acute attack of pancreatic necrosis if cholecystography demonstrates a normal gallbladder.

Recognition of Acute Pancreatic Necrosis

As far as the acute interstitial variety of pancreatitis is concerned (Zoeppfel's pancreatic edema) there is no reason to believe that this pancreatic disturbance eventuates in acute pancreatic necrosis. Acute interstitial pancreatitis not infrequently attends acute biliary tract disorders. Those who have operated on the so-called "acute gallbladder" have seen this pancreatic edema with fat necrosis not uncommonly. This form of pancreatic disturbance apparently does not threaten life seriously, all of Zoeppfel's and Arnsberger's cases having recovered. The great hazard of acute pancreatic necrosis is well known. With the widely practiced conservative management of acute biliary tract disorders, of which the acute interstitial type of pancreatitis is a not infrequent accompaniment, did pancreatic edema eventuate often in acute pancreatic necrosis, one would anticipate finding in every large series of "acute gallbladder" cases treated conservatively, a definite mortality from acute pancreatic necrosis. Such, however, is not the case. One may reasonably conclude therefore that these are really two different types of pancreatic affection and that acute interstitial pancreatitis may be treated conservatively with safety. The findings upon which the diagnosis of acute pancreatic necrosis can be made have been described elsewhere.²⁵ In brief, it may be said that in the typical case of pancreatic necrosis there is very severe pain. The abdomen is tender everywhere but largely in the upper half, where also the greatest rigidity is to be found—usually about a grade 2 or 3 on the basis of 4. Occasionally the outline of the indurated pancreas may be made out with the hand, indicating that the board-like rigidity of ulcer perforation is not observed in pancreatic necrosis. Unlike acute infections of the biliary tract which present the greatest tenderness and rigidity in the upper right abdomen, instances of acute pancreatic necrosis, in the experience of the writer, exhibit no such unilateral intensification of findings—the rigidity being uniform in the upper abdomen. Rectal and vaginal examination reveal no tenderness. There is no *intestinal colic*. The pulse and temperature usually exhibit moderate eleva-

tion. In the experience of the writer a depressed arterial blood pressure with shock has been observed only ante-mortem and in instance of pancreatic apoplexy.

The diagnosis therefore is made largely on the basis of exclusion. Acute cholecystitis, ulcer perforation, intestinal obstruction, acute appendicitis and strangulation of an ovarian cyst are the common conditions which have to be differentiated. The history and the differential criteria of physical examination which have been described, with the aid of an erect and a scout film made with the patient lying supine, usually serve to establish the diagnosis. The pain in acute pancreatic necrosis is severe but the rigidity of the abdominal wall does not approximate that of ulcer perforation. In acute appendicitis and strangulation of an ovarian cyst, the physical findings are most marked in the lower abdomen whereas in acute pancreatic necrosis most tenderness and rigidity are to be found in the upper abdomen. Elman finds the blood amylase findings of value. The experience of this clinic indicates that the differential criteria above described are quite reliable.

The condition described as chronic pancreatitis is not well understood. When jaundice is interpreted to be due to carcinoma clears after surgical interference, and the patient continues in good health, the surgeon infers (on no good evidence) that his patient was suffering from chronic pancreatitis.

Abscess

The most frequent precursor of pancreatic abscess is necrosis of the pancreas. Occasionally such abscesses are of hematogenous origin. They have been known to occur during mumps. The head is the portion of the pancreas most frequently involved in abscess. The writer has watched a pancreatic abscess go on to complete healing under conservative management. He has also observed spontaneous hemorrhage from such an abscess after the institution of external drainage—an event which may bring about sudden death by so-called "pancreatic apoplexy." A pancreatic abscess may follow an attack of pancreatic necrosis during the course of which a portion of the pancreas sloughs. Similarly, a pancreatic abscess may be the precursor of a pancreatic cyst.

The writer is disposed to feel that most cases of pancreatic abscess are best treated conservatively. If fever and tenderness do not abate after a reasonable trial with non-operative treatment, external drainage should be done,

marsupialization. Six patients with serous pancreatic cysts have been treated in that manner in this clinic and, as far as the writer has been able to learn, there have been no persistent fistulas. Cystadenomas of the pancreas should



Fig. 1. The typical abdominal protuberance presented by a patient with a large pancreatic cyst. The tenting in the left upper quadrant is quite apparent.



Fig. 2. The cyst shown in Figure 1 after excision. It proved to be cystadenomatous in type with considerable solid tumor present. It was surrounded by a very rich network of veins (Mrs. M. C., Hospital No. 63236).

are being taken to avoid contamination of the peritoneal cavity. In instances where the febrile response of the patient gradually subsides with parallel clearing of the abdominal findings, a waiting policy should be followed.

Cysts

Pancreatic cysts are essentially of two varieties: (1) the simple serous cysts and (2) cystadenomas, which in reality are tumors. The differentiation frequently made between true and pseudopancreatic cysts does not appear to be well founded. The most frequent antecedent of a large serous cyst of the pancreas appears to be a prior attack of pancreatic necrosis. These cysts usually present in the upper left abdomen and occasionally tent up the abdominal wall (Fig. 1). A pancreatic cyst is to be differentiated from a kidney tumor or swelling in that the latter can be felt almost invariably both in the loin and on the anterior abdominal wall. The airium-filled stomach can be readily shown to be in front of the swelling. The pancreas being retroperitoneal, a cyst arising in it usually disrupts the course of the ureter (and most frequently the left). In the experience of the writer, such a cyst can be satisfactorily managed by

always be excised. Marsupialization fails to cure them and further they may be the progenitors of cancer of the pancreas.

Excision of a large cystadenomatous tumor of the pancreas is not a simple task. Two such tumors have been seen in this clinic, both being successfully extirpated (Fig. 2). One of these had previously been marsupialized, with, as one might suspect, the persistence of an odorous fistula.

Carcinoma

About 2 per cent of all carcinomas have their origin in the pancreas. The most frequent site is the head of the organ, where invasion or compression of the choledochus early gives rise to jaundice. There have been no cures attending radical excisions for such a lesion. Leven has reviewed the experience of this clinic with the palliation afforded by cholecysto-anastomoses.¹⁶ The average survival period after such an operation in the University Hospital series (8 cases) was four months; the longest was fourteen and a half months. A 25 per cent mortality attended

the operation. The chief cause of death is hemorrhage.

Whipple, Parsons and Mullins have recently described instances in which they successfully removed in two stages a segment of the duodenum and the attached pancreas for carcinoma of the ampulla of Vater. The major pancreatic duct is ligated, a cholecystogastrostomy made, the ends of the pylorus and the duodenum are inverted and a gastro-enterostomy is done. Were it not for the danger of cholangitis and hepatitis following sacrifice of the sphincter choledochus, this operative procedure would appear to be an excellent one which might even be extended to some instances of carcinoma of the head of the pancreas.

Pancreatic Fistula

A complete persistent external pancreatic fistula in the dog is invariably fatal, due essentially to the loss of fixed base (sodium). Bollman has observed however when the dog is permitted to lick the secretions from the wound, that such a fistula may be tolerated. Such a fistula occurs in man after trauma or following operative attack upon the pancreas in which the major duct is divided. Severe excoriation of the skin results unless the skin is protected. If the drainage is profuse, suction should be instituted. A 5 per cent tannic acid ointment serves to protect the integument when the drainage is not excessive. Such a fistulous tract may be implanted into the stomach (Jedlicka). On one occasion, the writer successfully closed such a fistula by implanting a pedicled muscle flap into the fistulous tract.

Pancreatic Lithiasis

A calculus in one of the pancreatic ducts is one of the rarest of pancreatic maladies. No instance has come under the writer's observation. Obstruction of the duct is believed to be the major factor in their production. They are often radio-opaque. They may be identified fairly accurately prior to operation, if the shadows of such a stone can be identified on a radiogram within the limits of the horseshoe demarcated by an indwelling duodenal tube which has made its way as far as the duodeno-jejunal angle (Engelstad and Römcke). They often give rise to severe pain and should then be excised. Suppurative pancreatitis may also result owing to the obstruction of the pancreatic ducts.

Hyperinsulinism

Within the past decade, a new pathologic entity of great significance has come to light in the pancreas. It relates to the over-production of insulin by small adenomas of the pancreas which have come to be known as insulogenic tumors. Pathologists had observed them for decades, and had believed them to be without particular interest, other than as potential forerunners of carcinoma of the pancreas. Evidence seems clear too that abnormal production of insulin may occur in a pancreas which grossly or microscopically does not appear to be abnormal; that is, hyperinsulinism may occur in the absence of a demonstrable insulogenic tumor. That such is the case can be reasonably inferred from instances in which subtotal resections of what appears to be normal pancreas, have brought about complete relief from the convulsive seizure caused by hyperinsulinism.

Symptoms.—Spells of tremulousness and weakness and periods of unconsciousness attended by convulsive seizures are the usual complaints. There is often a sensation of great hunger accompanied by sweating immediately preceding such attacks. Not uncommonly patients learn that the taking of food, especially the ingestion of candy or sweetened orange juice, serves to lessen the frequency of periods of unconsciousness and convulsive seizures. The symptoms of the disease are identical with the occurrences which attend the taking of insulin by a diabetic patient beyond the physiologic requirement.

The physical examination between attacks reveals no pertinent findings. Sugar is not found in the urine and the fasting blood sugar is invariably low. Convulsive seizures or a period of unconsciousness due to the hypoglycemia of hyperinsulinism may be interrupted by the intravenous injections of glucose or by the intramuscular injection of a few minims of 1-100 solution of adrenalin, as a result of which the blood-sugar value is increased. The demonstration of subnormal blood-sugar values during convulsive seizure and the interruption of the attack by the intravenous injection of glucose establish the diagnosis of hypoglycemia.

One of the difficulties which hedges about the problem of hyperinsulinism is that the demonstration of hypoglycemia is not synonymous with hyperinsulinism. Affections of the liver, adrenal and pituitary, also have been known to produce

hypoglycemia. The most frequent cause, however, of spontaneously occurring hypoglycemia is hyperinsulinism. Exploration of the pancreas would appear to be justified in all instances of hypoglycemia where the cause remains obscure. When a tumor can be felt in the substance of the pancreas at operation, the course for the surgeon is clear. He should remove the tumor, resecting a bit of the adjacent pancreas if so indicated. When, however, a tumor can not be felt, his course of action cannot be so readily agreed upon. Whereas the results of excision of an insulogenic tumor have been almost invariably attended by cessation of convulsive seizures, such good fortune has not often accompanied resection of the pancreas when no tumor was found. The pertinent question in this latter type of case is, whether adequate excision of pancreatic tissue would suffice. There are two reported instances in the literature (Graham and Hartmann, and Simon) of hypoglycemia in which subtotal pancreatic excision resulted in cure. In the 1936 Year-book of Surgery, Graham states that three such cases are now known. The writer did such a subtotal pancreatic resection in an infant who died six weeks after the operation—a small residual abscess being found at postmortem at the hilum of the spleen. The hyperinsulinism appeared to have been successfully dealt with. After subtotal pancreatectomy, blood-sugar values were with few exceptions normal and there were no more convulsive seizures (Case 5).

However, there are a large number of reported experiences which attest the futility of pancreatic resection when an insulogenic tumor was not encountered (McCaughan and Broun). Before concluding that such instances of hypoglycemia had their origin in a site other than the pancreas, one would do well to ask whether the pancreatic resection in the failures was adequate. It is significant that in the successful cases *subtotal* resections were done.

The writer has had an operative experience with five cases. In three, insulogenic tumors were felt and removed at operation. These three patients have made complete recoveries from hypoglycemia with associated convulsive seizures. One of these, however, who had deteriorated physically and emotionally to an imbecilic state before operation, owing to the devastating effects of prolonged hypoglycemia upon the

brain, has not made a complete recovery (Case 2). The fasting blood-sugar values have been normal and there have been no convulsions. She was bedridden and had almost complete motor aphasia before operation; now she can do some

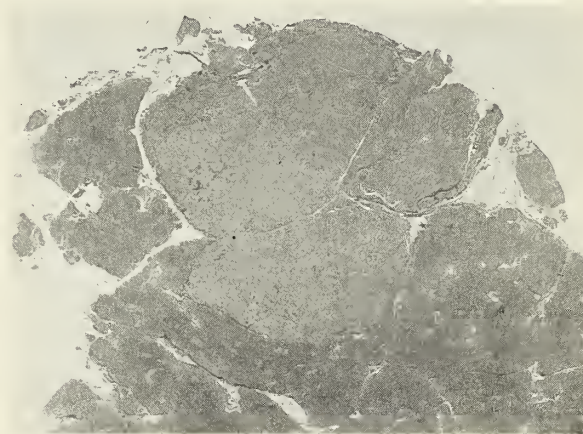


Fig. 3. A section of the encapsulated pancreatic adenoma from Case 1 is shown here.

of her own housework and carry on an intelligent conversation. The recovery, however, has not been complete and may never be. Permanent brain injury in prolonged hypoglycemia is now well known (Baker and Lufkin).

The Operation.—Care must be observed that the patient does not come to operation with a blood-sugar value at the convulsive level, for anesthesia, particularly ether, may aggravate the hypoglycemia. It is the writer's practice to give slowly a 5 per cent solution of glucose intravenously during the operative procedure. Exposure is made through a long left rectus incision under cyclopropane anesthesia. A transverse incision extending from one costal margin to the other would, however, be the most direct approach. The gastro-colic omentum is divided through the greater portion of its length. Deep broad retractors are inserted beneath the stomach, pulling it upward. This maneuver lays the pancreas bare through the greater portion of its extent. By running the fingers first over the surface of the pancreas and later seizing it gently between the thumb and fingers, the presence of a tumor can usually be made out with reliable certainty. In order to facilitate accurate palpation of the thicker head of the pancreas, the avascular lateral fold of the second portion of the duodenum should be divided, permitting simultaneous palpation of the pancreas with both

hands from two approaches. The writer has methodically examined the entire extent of the pancreas in this manner before concluding that no insulogenic tumor was present and before undertaking subtotal resection—a procedure

injury has been considerably modified by the experiences which surgeons have had with operative intervention for hyperinsulinism.

Before subjecting patients with chronic hypoglycemia to operation, the efficacy of frequent feedings of a high carbohydrate diet should be evaluated. Patients who exhibit definite improvement on such a regimen need not be operated upon. Hypoglycemic patients who prove refractory to such management and in whom no other cause of the convulsive seizures is apparent should be operated upon.

The details of the case records of the patients upon whom the writer has operated for persistent hypoglycemia follow herewith.

Case Reports

Case 1.—Mr. P. H., aged twenty-eight, hospital number 625929, was admitted March 22, 1934, with the complaint of spells of weakness since May, 1934, and convulsive seizures and periods of unconsciousness dating from February, 1931. He soon learned that eating tended to relieve the spells of weakness and forestall the convulsive seizures. Prior to July, 1933, the convulsive seizures and periods of unconsciousness were relatively infrequent. Since then, despite frequent taking of food, these seizures have occurred once or twice a day. The physical examination was essentially negative. The blood pressure was 135/70.

Examination of the blood and urine revealed no abnormal findings. Four fasting blood-sugars at various times after admission gave the following findings: 15.5, 21.5, 23.0 and 40.0 milligrams of sugar per 100 cubic centimeters of blood. Blood-sugar determinations made during attacks of unconsciousness varied between 15 and 50 milligrams. The sugar tolerance was as follows: fasting blood-sugar, 46 milligrams; at one-half hour intervals afterward, 154, 186, 210, 260. There was no sugar in the urine at any time following the test.

Under cyclopropane anesthesia exploration of the abdomen was done April 30, 1934. A small tumor located on the dorsal surface of the pancreas in its distal third was felt. Because of the difficulty of getting at it, the tail of the pancreas including the tumor was excised. The wound was closed without drainage. The patient made what appeared to be an uneventful convalescence, but returned later with slight fever and presented tenderness below the left costal margin. A diagnosis of subphrenic abscess, probably small, was made, as inferred from the shadow observed on a radiogram after inflation of the stomach and colon with air. Under conservative treatment alone it cleared up and the patient has remained well. There have been no further convulsive seizures and blood-sugar determinations have shown consistently normal values. The tumor was roughly spherical and measured twelve millimeters in diameter. It was reddish-purple in color and was identified histologically as an adenoma of the pancreatic islets.



Fig. 4. The tumor from Case 2 surrounded by pancreatic tissue. The microscopic diagnosis was adenocarcinoma. There has been no evidence of recurrence, however. It is not unlikely that this is pathologically the type of "mixed tumor" observed in the parotid gland.

which he has done in two instances (Cases 4 and 5). No tumors were found in the excised pancreas of these two cases. At the site of removal of the tumor or over the resected stump of the pancreas, the omentum is carefully sutured. The wound is then closed, with drainage being established with a soft rubber drain (Penrose) through a stab-wound.*

During the early convalescence, a 5 per cent solution of glucose in saline solution or distilled water is given quite liberally. The appearance of sugar in the urine indicates that there is no hazard from hypoglycemia. Occasional blood-sugar determinations should, however, be made. Suction applied to an indwelling duodenal tube has been used routinely postoperatively to avoid intestinal distension. Because of the magnitude of the undertaking, an oxygen tent is provided for the patient during the early convalescence. The great fear of the danger of pancreatic

*The chief contributing cause of death in Case 5 was probably an evisceration for which the wound was strapped. At the time of death, the wound was healed, but in addition to the residual abscess in the splenic hilum, there was evidence in the presence of thin fibrous adhesions of an antecedent peritonitis which probably followed the evisceration. Experiences of this sort with wound disruption after resection for gastric cancer, persuaded the writer to undertake closure of the abdominal incision with buried silk—the technic of the closure remaining otherwise the same, save for the substitution of silk for catgut. The results have been very gratifying and have been elsewhere described. (Transactions of the Minneapolis Surgical Society, January 1937.)

This patient has remained well and there have been no more convulsive seizures. Blood-sugar values have all been normal. A small hernia has developed in the incision which should be repaired.

Case 2.—Mrs. L. W., aged thirty-seven, hospital number 630202, was admitted to the neurological service on August 14, 1934, with the complaints of weakness and convulsions. The patient was admitted to hospital during a convulsive seizure. There were clonic and tonic contractions accompanied by carpedal spasms. The blood-sugar was found to be 30 milligrams per cent. Intravenous glucose solution was administered and the patient was aroused from a semi-stupor at once. These spells commenced about a year ago, and the patient's husband had learned that the oral ingestion of orange juice helped to awaken her.

The weakness had been so extreme that she had been confined to her bed. There had been complete disorientation and confusion. Her conversation had been unintelligible; the patient had been incontinent. The appetite had always been good.

Two years ago a subtotal thyroidectomy was done elsewhere for an adenomatous goiter without hyperthyroidism. The past history otherwise has no bearing on the present complaint.

Apart from the obviously impaired mental status, the notable physical findings were: (1) moderate emaciation; (2) a persistent adenomatous nodule in the right lobe of the thyroid. The blood pressure was 112/80. Fasting blood-sugars varied between 31 and 66 milligrams per cent. On October 14, 1934, the patient was transferred to the surgical service. Operation under ether anesthesia disclosed a small, reddish-yellow, unencapsulated tumor on the superior and ventral aspect of the pancreas. A frozen section made during the course of the operation was interpreted as a low-grade adenocarcinoma. In view of this histologic finding, a resection of a considerable portion (three-fifths to two-thirds) of the pancreas was done. The omentum was carefully sutured over the site of amputation of the pancreas, and a soft rubber drain was led out through a stab wound. The convalescence was without marked reaction and the patient was retransferred to the neurologic service ten days later.

There have been no recurrences of the convulsive seizures and the patient has steadily improved. The blood-sugars have been consistently normal since operation.

Blood-sugar values have all been normal and the patient has improved materially. She can now do some of her own work. Evidence of mental deterioration is still marked, however. It is to be noted that the patient continues well without evidence of recurrence despite the microscopic diagnosis of adenocarcinoma.

Case 3.—W. B., a boy aged eleven, hospital number 650512, was admitted to the University Hospital on July 7, 1936, with the complaint of recurrent convulsive seizures of 17 months duration. These occurred usually before meals and were characterized by clonic convulsions lasting a few minutes; periods of uncon-

sciousness of varying duration had not been unusual. The patient's physician, Dr. R. E. Pray of Fargo, North Dakota, had made a diagnosis of hypoglycemia due to probable hyperinsulinism before the patient was admitted on the pediatric wards under Dr. I. McQuar-

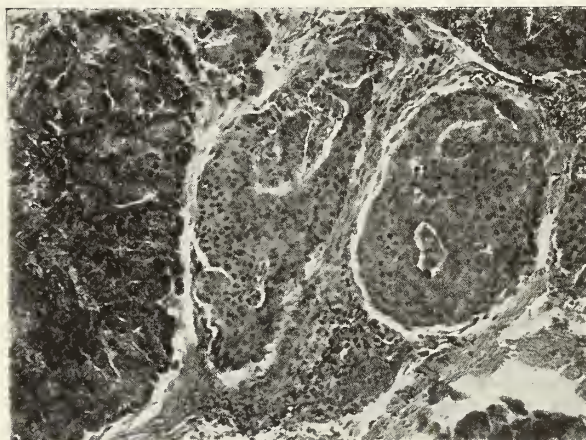


Fig. 5. A section of the pancreatic adenoma from the head of the pancreas in Case 3.

rie's care. On admission here the fasting blood-sugar was found to be 41 milligrams per cent. A convulsive seizure was interrupted by the intravenous administration of a solution of 5 per cent glucose. A trial with frequent feedings of foods rich in carbohydrates failed to avert convulsive seizures or to sustain a normal blood-sugar value.

On July 16, 1936, exploration of the pancreas was made through a left rectus incision under cyclopropane anesthesia. It had been explained to the relatives if a tumor could not be palpated at the time of operation that resection of the pancreas would be a therapeutic procedure of doubtful value. A tumor was felt in the head of the pancreas. The external leaf of the duodenum was divided, and by a combined approach from above and beneath the duodenum, an adenomatous tumor, well encapsulated about 1.5 by 2 centimeters in diameter was shelled out. A number of hemostats were placed and the surgical diathermy current was used to deal with the bleeding points in the deep wound. This tumor on microscopic section proved to be an adenoma. A small swelling had been felt in the tail of the pancreas, so it was amputated. This proved to be a lymph-node embedded within the pancreas. Drainage was employed through a small stab wound to the left of the incision.

The boy had a smooth and uninterrupted convalescence and there was no recurrence of convulsive seizures. All blood-sugar values made after operation were normal. A recent letter from the mother states that the boy has been active in school and has continued well.

Case 4.—Mr. F. M., aged twenty-nine, hospital number 623663, was first admitted to the University Hospital on January 7, 1934, with the complaints of attacks

of weakness, perspiration, and increased irritability, with periods of unconsciousness. The patient had an obvious acromegaly of several years standing. The first convulsive seizure occurred in April, 1933, and the patient was taken to Rochester, Minnesota, in an unconscious state. The blood-sugar was 46 milligrams per cent. The patient promptly regained consciousness following intravenous administration of glucose solution. The patient was tried out on a regime of frequent feedings but returned for exploration of the pancreas at a later date. This operation was done by the late Dr. Judd on June 21, 1933. There were no abnormal gross findings in the pancreas. A portion of the tail of the organ was excised but was found to be normal on histologic study. Following his dismissal, the patient gained forty pounds in weight with frequent feedings, but weakness and convulsive seizures still persisted.

On admission to the University Hospital early in 1934, because of the obvious acromegaly as indicated by the large hands and feet, prominent supra-orbital ridges and large nose together with tufting of the distal phalanges (though the sella was normal), cross-fire x-ray treatments were applied to the hypophysis but without evidence of improvement after the lapse of several months.

He was again admitted in the summer of 1934 and at the request of the Medical Service exploration of the pancreas was done July 23, 1934. Dr. Russell Wilder of the Mayo Clinic, who had seen the patient meanwhile, had suggested that a small tumor previously not demonstrated might now have grown to palpable size. A thorough exploration was carried out and the pancreas was freed wherever possible to permit of palpating the organ on both superior and inferior surfaces. No abnormalities could be made out. In the process of exploring the pancreas, the organ was fairly well separated from its bed of adventitious tissue.

After operation until the time of dismissal on August 10, 1934, the blood-sugar did not fall below 74 milligrams per cent and there was no recurrence of hypoglycemic attacks. On August 29, five weeks after the exploration, another convulsive seizure occurred and seizures have continued periodically since.

On September 24, 1934, in a subsequent admission hemorrhoidectomy was done because of rectal bleeding. Ether anesthesia was given to the same depth and for the same length of time as at the previous exploration. On completion of the operation, the patient's blood-sugar was 240 milligrams per cent. A few hours later, it dropped to 72 milligrams per cent, and the following morning the patient had another hypoglycemic convulsion.

The patient meanwhile was again given x-ray treatment to the pituitary gland without elevating the fasting blood-sugar values. Convulsive seizures still continued to occur. Continuous feedings of carbohydrates by an indwelling duodenal tube were tried without effect. Pitressin was also given without improvement. All fasting blood-sugars continued low.

On April 30, 1935, the patient was re-operated upon, a subtotal pancreatectomy being done. It was estimated that seven-eighths of the gland was excised.

The excised tissue weighed 30.5 grams, and showed no evidence of tumor. The postoperative blood-sugar values were all within normal limits. Pneumonia developed postoperatively and the patient died on May 5, 1935, six days after operation. At postmortem examination, pneumonia was found in the right upper lobe. The peritoneal cavity was clean. There was a small hematoma in the residual portion of the pancreas in the curve of the duodenum. Fat necrosis was present at this site. Examination was also made of the pituitary gland. Histologically, the eosinophilic cells appeared to be present in excess of the normal. A cell count made by Dr. A. T. Rasmussen of the Department of Anatomy was as follows: eosinophiles 62 per cent; chromophobes 20 per cent; basophiles 18 per cent.

Case 5.—R. Y., two and a half years of age, hospital number 651587, was admitted to the University Hospital on August 24, 1936, with a history of convulsive seizures since the age of four months. The attacks came most frequently before meals and most often in the late afternoon. The patient's mother has learned that the ingestion of sugar helped to avoid attacks. In the convulsive seizures, there were tonic and clonic twitchings which lasted for five to seven minutes. After the convulsion the infant would sleep for about an hour and seemed quite normal afterward.

Physically, the child appeared fairly well nourished, but he was definitely retarded mentally, being able to say only a few words. He was also quite irritable. The extremities were definitely spastic with hyperactive reflexes.

The urine was negative. The hemoglobin was 78 per cent, leukocytes 11,900. The Wassermann was negative, as was also the Mantoux test. The fasting blood-sugar varied between 23 and 42 milligrams per cent. After a glucose tolerance test, the highest blood-sugar value was 90 milligrams per cent observed three hours after the ingestion of the glucose. On one occasion, 40 minutes after the subcutaneous administration of 7.5 cubic centimeters of adrenalin, the blood-sugar was elevated to 134 milligrams per cent; after three hours, it had returned to 26 milligrams.

X-ray films made of the skull revealed evidence of a probable hydrocephalus. In consequence, an encephalogram was made which failed to substantiate that impression. The spinal fluid pressure was 20 millimeters of mercury.

There were frequent convulsive seizures during the hospital stay.

On November 2, 1936, under cyclopropane anesthesia subtotal pancreatectomy was done, no tumor being felt after careful palpation of the entire length of the pancreas. The pancreatic tissue removed weighed nine grams and appeared grossly normal. There was no evidence of tumor in the excised tissue. It was estimated that a residuum of about two grams of pancreatic tissue remained. Of sixteen fasting blood sugar determinations made postoperatively, all, with few exceptions were well within normal limits as contrasted with the persistently low values before operation.

Unfortunately, evisceration occurred on November 7

936, with protrusion of several intestinal coils. Considerable fluid had been given intravenously during the course of the operative procedure and the abdominal incision could not be closed because of the tense urinary bladder until catheterization had been performed. The intestinal coils were returned into the abdomen at the time of evisceration and the walls were strapped together with adhesive tape, a Penrose drain being led through the wound. The convalescence following evisceration was stormy, but by November 21, 1936, the wound had granulated in nicely and the infant seemed to be doing well. The preoperative fretfulness was no longer apparent, but abscesses developed in the right subcostal space and near the left internal malleolus, and in the left parotid gland. Death occurred on December 3, 1936, six weeks after the operation.

No evidence of peritonitis was found at the postmortem examination. There were, however, fibrinous adhesions throughout the peritoneal cavity. In the hilum of the spleen about five cubic centimeters of greenish pus, well encapsulated, was uncovered. The residual pancreatic tissue weighed 7.7 grams—an amount which was considerably in excess of that estimated to be left at the time of operation.

Comment

Two important clinical problems relating to hypoglycemia still demand solution. (1) The development of diagnostic criteria by which instances of hypoglycemia due to hyperinsulinism may be differentiated from hypoglycemia caused by disturbances of pituitary, adrenal, liver, and other functions not understandable in the present state of our knowledge. Hypoglycemia is not synonymous with hyperinsulinism. (2) Whether extensive pancreatic resection should be done in instances in which a pancreatic tumor fails of demonstration at operation is still debatable, particularly in the light of the limitations of differential diagnostic criteria just described. The recorded instances of complete and permanent success attending subtotal pancreatic resection would strongly suggest the virtue of its application.

Another matter which also requires elucidation relates to the biologic character of some of these pancreatic tumors. Adenomas may be present in the pancreas apparently without causing hypoglycemia; they may also occur in diabetes. Histologically, some of them appear to be carcinomas. Whether they may, like tumors (mixed tumors) in the sister serous gland, the parotid, prove to be biologically benign remains to be seen (Case 2). There are, to be certain, instances of frank insulin producing carcinomas of the pancreas

which metastasize, such as was first reported by Wilder and his associates.

Three successes attending excision of pancreatic insulogenic tumors causing hypoglycemia are here reported.

Summary and Conclusions

The diseases of the pancreas demanding the intervention of the surgeon are briefly described. Conservative management is advocated for acute pancreatic necrosis. The criteria upon which the lesion may be identified are described. Serous cysts of the pancreas may be satisfactorily managed by marsupialization. There have been no instances of persistent fistula attending external drainage of such cysts in this clinic. Cystadenomatous tumors of the pancreas should be completely excised. The experience of the writer with the treatment of hyperinsulinism is reviewed and three patients are reported who were cured of persistent hypoglycemia by the removal of insulogenic tumors.

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ACUTE SUPPURATIVE OTITIS MEDIA AND MASTOIDITIS*

C. L. OPPEGAARD, M.D., F.A.C.S.

Crookston, Minnesota

IN bringing to your attention some observations upon otitis media and mastoiditis, let me emphasize that we are dealing only with the acute suppurative types, leaving out of consideration the acute tubal catarrhs, the acute exacerbations of chronic otitides, and, of course, the chronic conditions themselves. By no means are these observations wholly original or even new, and to many of you they are known and commonplace. They have been gleaned from the literature, from the class-room, from hearsay, and from our own limited experience. Year after year we have accepted them at their face value, and have treated our patients on that acceptance. We thought it might be of interest to analyze positive observations from the standpoint of our own series of cases, and thus in the light of that evaluation discover the stability of these clinical assertions. In this analysis, we have used the cases of acute otitis media and mastoiditis that have come under our observation in the past ten years.

"The majority of cases develop as a sequence to measles, scarlet fever, influenza and colds"⁶ is our first observation taken from the literature. In recent years with the diminution in the number of and the severity of epidemics of exanthematous diseases in our community, the leading causes of acute otitis media are influenza and the common head cold. We have used here the term, head cold, to include also acute sinusitis, as all authorities practically agree that any severe head cold of over five days' duration has invaded the nasal sinuses. Considering the primary etiological factors in our series, the percentages are as follows: head colds, 56.9 per cent; influenza, 31.7 per cent; measles, 6.1 per cent;

acute tonsillitis, 1.9 per cent; scarlet fever, 1.6 per cent; and the miscellaneous causes of trauma, nasal pack, and swimming, 1.5 per cent.

"The predisposing causes are chronic catarrhal states of the upper respiratory tract, sinusitis, infected tonsils and adenoids and chronic infection of Rosenmueller's fossa."² There is no question that the effect the exciting causes have upon an individual is influenced by the local conditions present in the nose and throat, together with his general condition which we call resistance to infection. In evaluating this observation, 44 per cent of our patients either had had their tonsils and adenoids removed, or their tonsils declared negative to infection, while 56 per cent had infected tonsils and adenoids.

Dr. M. M. Cullom,¹ in studying the association of sinus disease and middle ear infections, believes that tonsils and adenoids are much less important than sinusitis as a cause of acute suppurative otitis media. He found that 85 per cent of his acute otitides coming to mastoid operation had demonstrable sinus infection. Fifty-two per cent of the patients in our series had had severe head colds or sinusitis and had had the tonsils and adenoids removed or had had the tonsils classified as normal. This percentage included all ages, while in the first two decades of life when tonsils and adenoids are more likely to be diseased, we found that 44.5 per cent of the patients with acute otitis media had sinus involvement in which the tonsils and adenoids were not factors. In view of these findings, the incidence of sinusitis and its relation to otitis media was not influenced to any great extent either by the presence or absence of infection in the tonsils and adenoids.

"Cases of acute otitides are most frequent dur-

*Read before the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 3, 1937

ing January, February, and March when there is a prevalence of acute colds engrafted upon subacute or chronic catarrh of the mucous membrane of the nose and throat, and also due to the prevalence of exanthematous disease."⁶ To those of us who live in a more northern clime, the extension of otitis media into the spring months would be expected. In our series, the highest number was observed in April with 14.8 per cent, and the lowest in June with 2.9 per cent. The higher incidence of cases from January to April must be influenced by lowered resistance following a long winter, together with the "stepping-up" increase in virulence of the organisms so characteristic of epidemics. The influence epidemics have upon the incidence of acute otitis media can be readily appreciated when we say that 29.1 per cent of all cases seen during the past ten years were observed in 1935. In our community at that time we had a definite epidemic of both influenza and measles.

"Adenoidectomy, thoroughly performed, will reduce the incidence of otitis media in children 95 per cent."⁵ In our series of cases, the incidence of infected tonsils and adenoids in children fifteen years or under with otitis media was 67.7 per cent as compared to 32.3 per cent who had had their tonsils and adenoids removed.

The analysis of our cases was carried further as to the effects of spontaneous rupture of the tympanic membrane and myringotomy had on the outcome of the cases. Let me add that the procedure of myringotomy is used in preference to stab paracentesis. As the purpose of the operation is to establish adequate drainage, one can readily see that a carefully placed incision involving practically a third of the tympanic membrane would supply that prerequisite, whereas a stab wound the size of a pinhead would not. Furthermore a curvilinear type of incision, acting as it does like a valve, would stay open longer and would less likely need repetition. In our series, 72.4 per cent had spontaneous rupture, and of this number 30.2 per cent required mastoidectomy, while 27.6 per cent had myringotomy performed, and of this group, 17.8 per cent had to have the operation. Another interesting finding was the effect spontaneous rupture and myringotomy had respectively on the duration of the discharge in those cases in which that information was definitely known. The average duration of discharge in those with spontaneous rupture was

twenty-one days, while in those undergoing myringotomy, the average duration was fifteen days.

Besides the general measures employed in the treatment of acute otitis media, we have always used the dry wick treatment, instructing the attendants thoroughly in the details of the procedure. The use of antiseptics locally in the acute process does not seem logical. We have a small chamber filled with pus under pressure which is forcing the discharge through a small opening in the tympanic membrane. It is usually just large enough to allow the pus to escape, and it is hard to conceive how the medication can overcome this pressure by gravity alone and get into the middle ear. Even if a small amount did get in, its effect would be negligible. The prescribing of drops to clear an acute case eases the doctor's conscience, and renders the care of the patient by the attendants careless, due to the feeling that when they have instilled the drops they have done everything necessary.

Roberts³ observed that of his cases of acute otitis media, the mastoid complications averaged only 10 per cent as compared to our 23.6 per cent, while only 16 per cent of his patients had spontaneous rupture of the membrane compared to our 72.4 per cent. He bases his low percentage of mastoid complications on the early drainage obtained by myringotomy. The variance in our figures can be explained, (1) by the belief of our people that the care of an ear is a simple matter; (2) by the popular opinion that spontaneous rupture is a natural sequence to be awaited; (3) by the fact that the local doctor is first consulted and rightly so; and (4) by the nature of our position as otologist in a clinic, we are only consulted when something goes wrong. The 23.6 per cent representing the high incidence of our mastoid complications can also be explained partly at least by the fact that we only saw the patients who developed suspicious mastoid symptoms, and those with otitis media who responded to treatment were not contacted, but were allowed to run their course at home.

"The higher incidence of surgical mastoiditis in spontaneous perforation of the drum membrane may be due to the fact that the more fulminating severe infections usually rupture early, while the milder infections less likely to lead to complications have time to come to the hospital and be opened a day or two after onset."⁴ Classifying

measles, scarlet fever and influenza as fulminating, and I believe rightly so, 84.9 per cent of our cases of otitis media caused by these three diseases ruptured spontaneously, while the milder infections as exemplified by head colds, acute tonsillitis, and trauma with secondary infection showed spontaneous drainage in 70 per cent. "We like to believe that early paracentesis prevents complications, but it is difficult to prove accurately."⁴ In our myringotomized cases over the ten-year period, the percentage that developed mastoid complications in spite of that procedure was only 9 per cent less than those who had spontaneous rupture. The one point that is definite, however, is that myringotomy does relieve pain, and, knowing that, many practice early incision in all cases. Granting that myringotomy has been properly performed, we wonder at times if too early incision does not necessitate repetition of the procedure. We have been taught to incise when bulging is present, and it comes to our mind that if there is not sufficient fluid in the tympanum to cause bulging, the incision, having no force to keep it open, seals rapidly. If the infection continues, we have the recurrence of fluid, the renewal of pain, and the necessity of another incision. Many times in these early cases drainage can be established through the eustachian tube, thus relieving the pain. Whatever our thoughts on the matter, drainage is a definitely accepted surgical principle. The application lies in the surgeon's judgment.

As we have mentioned before, the influence epidemics have upon the incidence of otitis media is also strikingly evident in its effect upon the number of surgical mastoids. Of all the mastoidectomies that have been performed by us in the past ten years, 46.9 per cent were done in 1935, a year of influenza and measles. In contrast to the effect myringotomy had in this epidemic of 1935 to that in the other years, we find that the number of the myringotomized patients who developed surgical mastoiditis was 20 per cent less in that year as compared to only 9 per cent less over the whole ten-year period. We feel this difference can be partially explained by the fact that people in the presence of epidemics become more health conscious, and thus seek attention earlier.

"The physician and patient, both aware of the proximity of intracranial structures to the middle ear spaces, are both inclined to demand early

mastoid operation, when pain, fever, and mastoid tenderness of an early otitis media do not promptly subside after myringotomy."² Only in rare instances is a mastoidectomy an emergency measure. With no signs of intracranial invasion the decision can be reached with deliberation, and the late operation is the one of choice when the maximum localization by nature has taken place. In our series, the average length of time from the onset of the otitis media to the time of the mastoidectomy was twenty-eight days. This certainly does not indicate the need for emergency measures. On the contrary, we do not mean to encourage surgical procrastination either. Excluding those cases in which intracranial and septicemic symptoms appear early, most of our emergency mastoidectomies have been in the neglected cases. Practically every acute otitis media at its inception has mastoid tenderness at least over the antral region, with many showing cloudiness of the mastoid by x-ray. These findings are due to the swelling of the muco-periosteal lining of the mastoid cells and do not require operation. In addition to the factors already mentioned, the progress of the condition from this stage is influenced by the pneumatization of the mastoid, complications being less frequent in the completely pneumatized. Many times at operation the explanation is evident why that particular patient needed operation, namely, the finding of a small antrum which could easily be blocked off from the middle ear by the infection with the resulting retention of discharge in that area and extension into the remainder of the mastoid cells. Originally there is no barrier that requires force or pressure to overcome before the infection can travel from the middle ear to the antrum, but there is a channel, the aditus ad antra, that is always open. This explains the antral tenderness that appears early in acute otitis media.

"Some operators apparently believe that a mastoidectomy can always cut off every communication between a tympanic infection and the brain if properly timed and skillfully done. Direct extension through the mastoid by necrosis, decalcification, and destruction of bone is generally accepted as the route to the brain most frequently taken by a tympanic infection. This is the only route the infection can take that will be affected to any great degree by a simple mastoidectomy."⁷ This process requires time, and in

that given time nature can attempt to localize the spread, and the surgeon can deliberate as to the best time to aid nature to prevent further spread. Mastoid surgery will not aid much in those cases in which intracranial complications are due to the extension by the hematogenous route or by septic emboli from the middle ear.

The public has been educated to the fact and rightly so that an earache and its possible consequences are dangerous. From the medical standpoint, every ear should be considered dangerous until healed. To many, doctors included, an otitis media is not serious as long as the ear is discharging. The fallacy lies in the fact that it is many times the mastoiditis which has developed that is keeping up the discharge. It is also commonly believed that otitis media and mastoiditis run to a definite pattern, but in that belief the neglect of proper treatment for an in-

dividual case can develop. In our treatment we must first consider the possible potential fatal consequences in cases of acute suppurative otitis media and acute mastoiditis, and then the factor of hearing. We know that proper care in childhood is one of the foremost factors in the prevention of deafness later in life. With these two sequelæ in mind, we have attempted to present an analysis of a few observations.

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IMMUNIZATION AGAINST THE COMMON DISEASES OF CHILDHOOD*

W. BRYANT RICHARDS, B.S., M.B., M.D.

Saint Cloud, Minnesota

GREAT strides have been made in the reduction of the morbidity and mortality due to the contagious diseases of childhood. Certainly immunization procedures against some of the infectious diseases have been the greatest factor in this reduction. Through public education, radio talks, newspaper and magazine articles, as well as education through the practicing physician, public health agencies and clinics, parents have become coöperative and eager to have their children protected. It is our duty not to make too extravagant claims for these immunizations. Therefore, it is well for us to study the present status of the procedures commonly used.

1. *Smallpox*.—We are all familiar with the earliest form of immunization: vaccination against smallpox and how its use has practically eliminated the disease. The best age for vaccination is between the sixth and twelfth months of life. This affords early protection and minimal reactions.

The general procedure is to cleanse the skin with acetone or ether; in boys, at the point over

the insertion of the deltoid muscle of the left arm; in girls, the outer aspect of the left thigh. A drop of virus is placed on the cleansed area and one of the approved technics: multiple puncture, pressure or scratch, may be used. Multiple puncture method claims more takes and smaller scar formation. The excess virus is wiped off. No covering is necessary until the pustule develops, when a dressing of sterile gauze is advisable at all times to keep out water and to prevent contamination of the pustule. If no pustule develops within ten days re-vaccination should be performed. A successful reaction gives immunity for from four years to life, but during epidemics revaccination is advisable. There are some who advocate the intradermal method, but this not in common practice as yet. Rivers,²² using a cultured virus administered by intradermal injections, claims safety against contamination, no scab or scar formation, and no need for protection at the site of treatment.

2. *Diphtheria*.—Statistics and experience prove that immunization against diphtheria should be a routine procedure. About 90 per cent of young children are susceptible and need

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no Schick test, but in older children and adults, a preliminary Schick test is advisable to determine the need for immunization.

The logical time for immunization in infants is between the ninth and twelfth months of life. If given previous to the sixth month the injection may be ineffective due to the neutralizing action of the antitoxin which has been transferred to the child from the immune mother.

Various preparations, notably toxin-antitoxin, ana-toxin, toxoid and alum precipitated toxoid, have been used with success. Recent studies have proved that 0.5 to 1 c.c. (varying with different preparations) one dose alum precipitated toxoid give approximately 95 per cent immunity within two to six months.

All children who have been exposed to the infection and have a positive Schick test should be given 1,000 units of diphtheria antitoxin intramuscularly, but care must be taken to see that the child is not sensitive to horse serum.

Some adults and children over eight years of age are so sensitive (allergically) to the protein of the diphtheria bacillus that the injection of the usual dose of the toxoid causes severe local and general reactions. This sensitivity can be detected with the use of the sensitivity test, which consists in the intracutaneous injection of 1 c.c. of toxoid. If within three days an area of redness measuring more than one-half inch in diameter develops at the site, it is advisable not to administer the usual dose of toxoid for immunization. These toxoid-sensitive persons can be immunized by giving three subcutaneous injections of the toxin-antitoxin, or two or three intracutaneous injections of one-tenth the usual dose of alum precipitated toxoid at weekly intervals.

Löwenstein of Vienna¹⁴ advocates the percutaneous method, using an ointment which contains both toxoid and unfiltered culture of dead diphtheria bacilli. The ointment is rubbed into the skin. This preparation is not available commercially in this country, but it will be interesting to watch for a possible perfection of the new method. If effective amounts of toxoid can be gotten into the blood in this manner, the use of the ointment will be the method of choice.

Fitzgerald⁸ reports that from 1927 to 1934 there was a total of 121,000 persons immunized in Toronto, and that in 1934 only eighteen cases of diphtheria were reported; and from January,

1934, to March, 1935, not one death from the disease was reported. Following this widespread immunization there has been a great decline in the mortality and morbidity from diphtheria.

However, diphtheria immunization is worthless unless it is checked with a subsequent Schick test. While, with the one dose of alum precipitate, 90 to 95 per cent will be immune, the five or ten per cent who are not immunized would have a false sense of security. Those showing a positive reaction to the Schick test six months following the immunization should be given additional toxoid until the reaction becomes negative. The immunity lasts from six to sixteen years.⁴

3. *Scarlet Fever*.—Natural immunity to scarlet fever is found in about 50 per cent of children and in a somewhat larger percentage in adults. Inherited immunity lasts from six to eighteen months. Children should be Dick tested between the ages of 18 months and two years. The Dick test has been accepted by many investigators as a reliable index of immunity. A negative test assumes the child is immune to scarlet fever.⁵

W. Heesen and B. Ruckert⁹ in 1936 told of their experience with Gabritschewsky toxin which is made up of a culture of hemolytic streptococci from scarlet fever cases, the preparation being treated with formaldehyde and the streptococci killed. One c.c. contains 500 million dead streptococci. For six years they found that one c.c. of this toxin intramuscularly gives adequate protection against scarlet fever, without any complications. They have not obtained similar results with any of the other toxins which were tried. There are no further reports on the use of this toxin.

To actively immunize against scarlet fever 25,000 S.T.D. of Dick toxin in 2 c.c. ointment has been used by Martner¹⁷ with 66 per cent immunity production. Scarlet fever toxoid has also been used, but not extensively. The most favorable method consists in the subcutaneous injection of five increasing doses of scarlet fever streptococcus toxin at weekly intervals, approximating 140,000 S.T.D. Koehler¹¹ states that Dick tests on 5,700 children who had received the five doses of immunizing toxin gave 93.5 per cent negative reactions. The case rate in the completely immunized was 2.3 per 1,000, while the

ate in the ordinary elementary school population was 60 per 1,000. He observed the following reactions: 3 per cent severe systemic, 15 per cent moderate systemic, 16 per cent mild systemic, 23 per cent local, and 43 per cent none. All children recovered rapidly and completely from all reactions.

E. S. Platou¹⁹ in a study of medical literature reported an annual incidence of 1.65 per 100,000 among susceptibles inoculated in accordance with the recommendations of the Scarlet Fever Committee, and 2,317 annual case incidence per 100,000 in unimmunized control cases.

Anderson¹ reports only seven cases of scarlet fever among 1,360 immunized nurses, compared with ninety-eight among 667 susceptibles, and that 89 per cent of a group originally negative were still negative four years later. These attack rates indicate clearly that toxin injections confer a high level of protection.

All immunized children should be checked with a subsequent Dick test within one to two years. If the test is still positive, additional toxin should be given.

The Committee on Prophylactic Procedures Against Communicable Diseases of the American Academy of Pediatrics does not recommend active immunization by scarlet fever streptococcus toxins as a public health measure because local and general reactions are frequent and also the degree and duration of the immunity have not been definitely established. A severe reaction can be definitely reduced, or even eliminated, by dividing and increasing the number of doses of the toxin.²⁰ Parents should be told the possibilities, and at this time we should not promise too much. However, if we can reduce a severe and expensive illness, a long isolation in quarantine, and produce a lowered incidence of complications and sequelæ, immunization for scarlet fever deserves more extensive use.

4. *Pertussis*.—Unlike so many of the other infectious diseases of childhood, there is no natural immunity to whooping cough.

In 1933 Madsen,¹⁶ using vaccine of the State Service Institute at Copenhagen, reports the results of two epidemics. He found the mortality of the vaccinated group one-sixteenth of that of the non-vaccinated group.

Sauer²³ reports on five and one-half years' experience with a vaccine prepared from human blood, reporting that the patient will require a

total dosage of 8 to 12 c.c. It is given in three weekly hypodermic injections as follows: 1 c.c. in each deltoid region the first week, 1.5 c.c. in each triceps region the second, and 1.5 c.c. in each biceps region the third week. A transient local erythema at the site of injection seems to be desirable. It usually disappears within a few days. Sauer concludes that if his injections are given three months before exposure, 70,000 to 80,000 million organisms conferred immunity against whooping cough; and in a progress report that has been made on pertussis immunization study in Grand Rapids, Michigan, which included 1,592 children (712 in the test group and 880 in the control group) there have been sixty-seven cases of whooping cough, of which number sixty-three occurred among the controls.¹⁰

Reading²¹ reports 94 per cent of the children immunized with the Sauer method have escaped the disease, so apparently it confers considerable immunity. It is best to immunize early, between the seventh and tenth months of life, as it takes four months to develop immunity with Sauer's vaccine. Children exposed without benefit of immunization or before full development of immunity, may be given Krueger's antigen.

The experience of Niemans and Aldrich¹⁸ with this antigen indicates that although the prophylactic effect is more certain, the antigen apparently has a definite effect on modifying and shortening most pertussis infections. This fact is particularly true when the antigen is given early in the attack or before the onset of the cough.

Toomy,²⁴ very recently, reports the use of pertussis mucoid material injected as a vaccine into children ill with the disease. There seemed to be a shortening of the length of the attack and a decrease in the number of paroxysms and coughs. He obtained much better results than with the use of the various B. pertussis vaccines. The results of further study and experimentation with this material should be interesting. However, no satisfactory test has yet been devised to determine susceptibility or immunity to pertussis.

5. *Measles*.—There is no method of active immunization against measles but the prophylactic and therapeutic properties of adult blood serum and of convalescent serum have been confirmed by various authors.

Thirty c.c. of normal adult blood or 20 c.c. of normal adult serum or 10 c.c. of human blood serum from a person recently convalescent from

the disease may be used. If injected intramuscularly within five days after exposure, it may protect against the disease. If immunity isn't complete only a mild form of the illness develops.

Finkelshteyn⁷ of Russia and McKhann et al¹⁵ in the United States advocate the use of placental extract. This gives results equal to, if not better than, convalescent or adult serum. There is a commercial product now available for prophylaxis and treatment called "measles globulin," derived from placental extract.

Eley⁶ of Boston recommends placental extract (immune globulin human):

1. To confer an active and lasting immunity by allowing strong healthy children to contract the disease, but modify its severity and preventing complications by administering only one injection of 2 c.c. of the extract.

2. To confer a passive immunity in children exposed in institutional outbreaks and to children who are very young, debilitated, tuberculous, or acutely or chronically ill. It is given for a protection of several weeks' duration or until the patients are able to withstand a "modified infection." Two injections of the extract are given, 2 c.c. as soon as an exposure to measles has occurred, and a second dose of 2 c.c. four days later.

6. *Poliomyelitis*.—Kolmer et al¹² and Brodie and Park³ used different preparations of a suspension of spinal cord from monkeys which had received an inoculation with sodium ricinoleated virus. Thousands were inoculated and success claimed in establishing immunity.

Leake,¹³ Medical Director of the United States Public Health Service, reported that twelve cases of poliomyelitis developed directly as a result of Kolmer's immunizing agent and concluded that the facts as presented render the further use of poliomyelitis virus for human vaccination undesirable at the present time.

Convalescent serum has been of some value in producing passive immunity and is therefore an aid in the treatment of the disease.

7. *Chickenpox and Mumps*.—Convalescent serum from individuals recently recovered from both chickenpox and mumps has been used to prevent both of these diseases. Their value is not absolutely proven and the indication for such use is infrequent due to the mildness of these infections.

8. *Typhoid Fever, Tetanus and Rabies*.—These three infections, although rare, may be prevented by proper use of available vaccines.

Tetanus toxoid has been developed during the past few years and this product bids fair to supplant the older methods of prophylaxis against tetanus infection.

Bergey² used a single dose of alum precipitated toxoid followed by antitoxin, the content of which is similar to that of three injections of regular toxoid. There is no question but that it is an active immunizing agent. It remains to be seen to what extent it will receive practical application.

An effort has been made to review very briefly the current status of immunization against the common diseases of childhood. Certainly there is a group of precise indications for the application of specific agents and no physician has the right to withhold from his patients the specific protective methods which have been proven safe.

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ACUTE APPENDICITIS IN CHILDREN UNDER TWELVE YEARS*

ARTHUR N. COLLINS, A.B., M.D., F.A.C.S.

Duluth, Minnesota

IN looking back over my experience in surgery, appendicitis in children, particularly in very young children, has afforded a difficult problem. To fail in the diagnosis of acute appendicitis in a child has always been a source of anxiety. The counsel of a pediatricist on whom one can rely and who is accustomed to dealing with the various conditions in the abdomen in childhood is not always available. Sometimes when such counsel is at hand the diagnosis of appendicitis remains puzzling. Sometimes after the arrival at a diagnosis of acute appendicitis the proper procedure is not clear cut.

During the past year, therefore, I have made a survey of 200 case records of our hospitals in an effort to analyze the combined experience of our surgeons in Duluth.

In this series there was but one patient one year old operated upon for acute appendicitis and she recovered. There were no cases in the second year of age, and only two cases at the ages of two and one-half to three years.

Seventy-one per cent of these 200 cases occurred between eight and twelve years of age. The curve of incidence (Chart I) rises rapidly after the age of six.

Acute appendicitis may occur at any age from the cradle to the grave. While the incidence rises markedly after the age of six, the heavy incidence of acute cases is in the period of youth and adult life, as is well known. An effort will be made to analyze the results of various methods of treatment in childhood and to obtain some idea of the prognosis at different age levels within the group.

Appendectomy in these 200 cases was the rule. Some cases were seriously complicated with peritonitis and drainage only was done in fourteen such cases, with but one death. In the mortality list one case had drainage only. The rest had appendectomy and drainage.

In the matter of diagnosis,—in all cases diagnosed preoperatively as "ruptured" or "gangrenous" or "peritonitis," the operative findings

were confirmatory. Of course, gangrene, perforation, abscess, peritonitis or free pus were frequently found at operation when not diagnosed preoperatively.

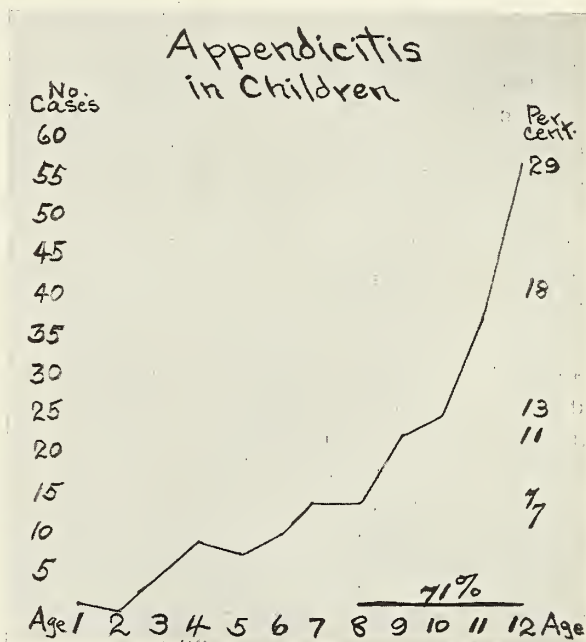


Chart I.

A gangrenous appendix and signs of peritonitis were found at operation in 70 per cent of the series.

The leukocyte count is apparently not a guide as to seriousness. In forty cases it showed an average of 23,000. General averaging in this manner, however, gives little information. For instance, the maximum white counts in the mortality list of nine ranged widely from 8,400 to 41,000. In the group of fourteen cases where drainage alone was done, with but one death, the white counts were all over 10,000. The differential counts in the mortality group gave polymorphonuclear counts of 72, 79, 81, 84 and 95 per cent. The differential counts in the drainage only group were all over 80 per cent. Prognosis, according to the Gibson Chart, was worked out on five cases in the mortality list where the information was available, and the prognosis was wrong in all five.

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Catharsis during an attack seemed to play no informative part in these 200 patients, judging by the records of only one death in nine patients given cathartics. However, if all the records had contained positive or negative statements on this point in particular, and especially at what stage in the acute attack catharsis was given, some definite information might have been obtained.

Inasmuch as removal of the appendix was the rule in these cases, it is interesting to study the results in the mortality list as compared to the drainage only list a little more fully.

Of nine patients who died, all but one had appendectomy. In the fourteen cases of drainage only and no appendectomy, there was but one death. If we consider the time intervals from the onset of attack to the time of operation in these two sub-groups, we find in the mortality list of nine the intervals were: Twenty-four hours in three cases; thirty hours in one case and an interval of three, four, six, ten and twelve days in one case each. In the cases listed as drainage only, the interval was over three days in every case and most of the intervals were ten to fourteen days, which suggests that abscess formation was better established and the indications for drainage were more definite.

There were twenty cases of abscess recorded (10 per cent of the total group). In nine of these twenty cases appendectomy was done; in ten, drainage only. One in this group died. There is nothing here as a guide to the better method of procedure. Current practice is probably to remove the appendix if it is easily accessible without breaking up limiting adhesions and contaminating the uninvolved peritoneum.

Nine deaths in 200 cases show a mortality rate of 4.5 per cent for the whole series. The figures change, however, if certain groups are taken separately. Seventy-one per cent of these children were eight to twelve years old and the mortality in this age group was only 1.4 per cent. If, however, we consider the fifty-eight cases (29 per cent of the total) under eight years, we find seven deaths, making a mortality of 12.7 per cent. Six of these seven deaths were in girls. Apparently the lesson to be observed is, if the patient is a girl under eight and acute appendicitis is diagnosed, the greatest conservatism should be exercised at operation.

In the group of fifty cases diagnosed gangren-

ous appendicitis, five died, making a mortality of 10 per cent. One boy and four girls were the victims in this group and they were all under eight years of age. The leukocyte counts here were nearly all over 12,000, and 70 per cent of the counts were over 15,000.

In the cases termed "gangrene," "free pus," "peritonitis," or "not localized" we have the four most dangerous types found at operation. The mortality in this group is 9.8 per cent, but, worse still, if we take each subgroup separately, the mortality rises, namely: free pus cases 18 per cent; peritonitis cases 29 per cent; not localized cases 66 per cent.

Complications

Secondary abscess occurred in several cases, a few of which ruptured spontaneously into the rectum and others required secondary drainage. Two girls, aged 11 and 12, had intestinal worms. One of these died with peritonitis and round worms as a complicating factor. The other had pinworms.

One girl of twelve who was operated upon and recovered had gallstones and a hard pancreas as well. A girl of nine developed bilateral suppurative parotitis, with incision and drainage. One girl of twelve, who was operated upon and recovered, had a suppurative parotitis and also a cul-de-sac abscess which was drained through the rectum. Several cul-de-sac abscesses were drained in this manner. A fecal fistula was present in one case. One boy of eleven had an appendiceal abscess drained four years preceding his second operation for acute appendicitis.

Summary

In a review of 200 cases of acute appendicitis in children of twelve years or under, the incidence was found to increase rapidly after the age of six, so that, at the age of twelve, it is six times that at the age of five or six.

Acute appendicitis was comparatively rare in this group in the first two years of life.

The time interval between onset of attack and operation was longer in the cases where drainage only was performed. The indications for simple drainage in these cases was more definite.

There were nine deaths in 200 cases—a mortality rate of 4.5 per cent. There was but one death in fourteen simple drainage cases.

The four most dangerous types are those

termed "gangrene," "free pus," "peritonitis" and "not localized" at operation. Here the mortality ranges highest of all.

One conclusion which was reached was that in

acute appendicitis in a girl under the age of eight the greatest conservatism should be exercised at operation, inasmuch as seven of the eight deaths in this group were in girls.

POST-INSTITUTIONAL CARE OF THE INSANE

WALTER P. GARDNER, M.D., F.A.C.P.

Fergus Falls, Minnesota

ONE of the basic endeavors of the Mental Hygiene movement is the promotion of improvement in the care of the insane. I wish to emphasize that care of the insane should not end with release of the patient from the hospital, but should follow through to his readjustment to society, complete or partial, as the case may turn out to be. Mental hygiene must turn more attention to this problem.

I shall deal briefly with the methods of after-care which we attempt to employ at the Fergus Falls State Hospital. In order to understand the problem we should know the methods by which patients may be admitted, may be released and may be returned to hospitals for the insane in Minnesota.

A person comes to enter such a hospital in most instances by voluntary application or by commitment to the custody of the superintendent of the institution by the probate court of the county in which the insane person resides. Occasionally individuals who have been committed to the custody of the State Board of Control are placed in hospitals by the Board. Rarely patients are received by transfer from other institutions and occasionally from the District Court.

In order to enter a Minnesota hospital for the insane as a voluntary patient, the applicant must be a resident of the state, twenty-one or more years of age, sane enough to realize the nature of the institution and desirous of entering the hospital of his own volition, without coercion. He must sign an application which states: "I,, a resident of County of, believing myself to be afflicted with mental disease and desiring to receive treatment therefor, apply for admission to the State Hospital. I agree to submit myself to the custody of the superintendent of said hospital and abide by all rules and regulations in force, and in case I

desire to leave said hospital, will give written notice of my intention so to do to the superintendent thereof."⁴

The procedure by which a patient enters the hospital by commitment is briefly as follows: A verified petition is filed in the Probate Court of the county in which the patient is then residing, praying for an examination of the individual to determine as to his sanity. The individual is then examined by a board consisting of the Judge of Probate and two physicians. His interests are safeguarded by the County Attorney. If he is found to be insane ". . . one of unsound mind other than one who may be properly described as only an inebriate or feeble-minded person . . ."⁵ he is committed to the custody of the superintendent of one of the state hospitals and delivered to him by, or under the direction of, the sheriff of the county from which he was committed. Approximately 88 per cent of admissions are by commitment.

Patients may be released in the following manners: When a voluntary patient requests his release, if his condition warrants it he is discharged from the hospital and no longer has any official connection with it. If the patient is too disordered mentally, the superintendent or one designated by him files a petition in the Probate Court of the county in which the institution is located praying for a hearing as to the individual's sanity. The Probate Court at the hearing either finds the patient sane and discharges him or finds him insane and commits him to the custody of the superintendent. In the latter case he may be released from the hospital only as any patient originally admitted by commitment.

An individual in the hospital under commitment in insanity may be released, upon the approval of the superintendent, to a relative, friend, or other responsible person, under parole

agreement or bond. The essential specifications of both the agreement and the bond are that the principal and sureties in the case of the bond, and the signee in the case of the agreement, are obligated to provide care and safekeeping of the patient while on parole and to pay the expense of his return to the hospital, if such return becomes necessary during his parole period. Occasionally patients are released under straight parole, namely, to themselves. Again, very rarely a patient is released through district court proceedings, in which case he is discharged from the books of the hospital. Almost all patients who are released are paroled under agreement or bond. The parole period usually runs at least one year. It may be renewed or the patient may be discharged from the books of the hospital upon authority of the State Board of Control. Some patients leave the hospital by escape.

While an individual is on parole or escape, he may be returned to the hospital at any time without either further process of law or willingness on his part, if his mental status warrants such return. Once a patient is discharged from the hospital, either by the superintendent in the case of voluntary patients or by the Board of Control following parole or escape, he can re-enter the hospital only under the conditions and methods outlined above for original admissions.

As I have emphasized elsewhere,³ before intelligent institutional care can be instituted we must know: (1) what the patient was like before he developed his mental disorder; (2) what happened to him physically and psychically; and (3) the patient as he is when he presents himself at the hospital. In directing intelligent post-institutional care, in addition to these things we must know what the patient is like when he leaves the hospital and the nature of the environment which he is to enter. It is essential to realize that in each case we are dealing with an individual of a given native endowment reacting to experiences of life specific for that individual. The importance of environment as part of experience can not be too highly stressed, both in regard to the part it plays in the development of the disorder and in the after-care. Truly one can not separate the individual from his environment.

It seems to me that under the present conditions the essential direction of the post-institutional care of the insane must in a large measure

be supervised by the hospital through its field workers under direction of its resident medical personnel. However, it is essential to have the coöperation of the general practitioners and psychiatrists in private practice if the best results are to be obtained in the treatment of these individuals. Although the supervision rests ultimately with the hospital staff, the psychiatric social worker and the physician in the field are the two most important direct forces in the after-care.

As has been outlined by Crutcher,² this part of the psychiatric social worker's duty may be divided into two phases—pre-parole period and the parole period. The psychiatrist directs the treatment of the patient. He makes the diagnosis, gives his impression of the prognosis and interprets the patient's personality before onset of the illness, his progress toward recovery, his condition on release, and his needs to his family and to the social worker. The latter during the patient's stay in the hospital is expected to gain a working understanding of these matters, as well as knowledge of the patient's general home situation and his community. She has established a working contact with the family, the agencies in the community, and other forces such as the local medical advisor. She works with these individuals and groups in building up in as far as is possible an environment which will meet the patient's needs as outlined by the psychiatrist.

In the period immediately preceding parole, the social worker should, if necessary, make further investigation into the home situation before release of the patient. She should investigate the attitude of the family toward the patient and attempt to improve it if faulty, considering each member of the immediate home unit individually and the group as a whole. It may be best for one or more individuals to live elsewhere if the patient is to have a reasonable chance of adjusting upon returning to his former environment. Again "home" may not be the proper place for him upon leaving the hospital. The physical condition of his residence must also be adequate. Opportunities for employment, if such is advisable for the convalescent, should be considered. Is it available at all, and, if so, is it the type suitable for the given patient? Occupational therapy in the form of employment or in other forms is essential to success in after-care. Idleness pro-

vides opportunity for brooding and must be avoided. The social worker should carefully estimate the reaction of the family and community agencies to supervision of the patient. The family should not resent supervision of the released person and should be led, if possible, to understand the attitude of the hospital in the follow-up of its patients. The relatives should be informed of the value of the local agencies and the physician in the field in helping their own relative to re-establish his place in society. After the psychiatrist and social worker have reviewed and discussed these various factors, they must determine as to the advisability of the return of the patient to that given environment. The home may have changed vastly for the better as a rule, but occasionally for the worse, since he left it. If it is not suitable for the individual, other arrangements for his parole must be made. In this event the same type of investigation is made, and what appears to be the most suitable environment obtainable is selected, and the patient paroled.

Whenever possible and practicable, the community agencies when they are contacting the individual's family, should be made aware of the impending return of the patient to his home, as they must include him in their plans for that family. They may be able to provide work for him on a relief project, or, if he cannot work, they provide him with direct relief. The rapport established with the community agencies and physician in the field during the early contact with the patient, and during the pre-parole period, should be maintained. The most important work of the psychiatric social worker in the parole period is the follow-up visits or supervision. Except in unusual instances a "home" visit is made shortly after the patient's release from the hospital. This early parole visit has several objectives. The hospital becomes informed as to the patient's early adjustment and the attitude of the family toward him and the hospital as it actually is after his return from institutional care. More important than this, however, is the fact the patient usually realizes that he has not been forsaken by the hospital, the persons who aided him in his improvement or recovery. Someone who understands him is interested in him and wishes to help him to interpret him to his family and others in the community. The family should be informed that the hospital is always ready and

willing to help them with their problems and to assist the family physician in his dealings with the patient.

As I have indicated, to obtain the best results in the post-institutional care of the insane there must be coöperation between the hospital and the physician in the field. It is not always necessary to be a psychiatrist to aid these persons. However, the general practitioner must assume the proper attitude toward these individuals. As a general rule, when the patient leaves the hospital, he is considered as improved or recovered, not as "insane." It is hard enough for him to bear the attitude of many lay people in his environment that he is someone to be watched either with amusement or fear without being confronted with a similar attitude upon the part of his physician. Start with the attitude that the patient has the same right to your consideration as he would have had had he never been in an institution. Make him feel that he is welcome in your office to the same degree other patients are, neither more so nor less so. C. Macfie Campbell¹ has aptly said, "The general practitioner's attitude toward his patient and mental cases should be the attitude of the medical man to his patient, neither more nor less. The physician who sees in his patient an individual in need of help, whose distress or incapacity he is called upon to relieve by his technical skill or advice, need adopt no special attitude toward him because he happens to be classified as nervous or mental. He will deal with the patient's symptoms as a biological problem requiring a study of the patient's adaptation to his environment." There is unquestionably a need for a better knowledge of clinical psychiatry among physicians whose work is not primarily psychiatry. The meaning of the commoner terms should be understood. A simple workable classification should be acquired and a knowledge of the chief characteristics of each group mastered. With this equipment a physician consulted by a former patient of an institution for the insane can readily inquire of that hospital as to the nature of the individual's disorder and their suggestions as to his treatment. Far too seldom do we receive requests for the information of this type. The physician in the field should be on the lookout for the return of symptoms in order that early treatment may be instituted. Information should be obtained from

the hospital as to the patient's personality and as to his needs.

Two types of individuals bear special watching, the depressed and the paranoid. All cases of depression are potentially suicidal. It is often difficult to convince the family of a moderately depressed individual that he may very likely commit suicide. Every effort must be made in this direction. However, it is not wise to allow the patient to feel that he is being constantly watched and protected from himself, as this in itself heightens the probability of his taking his life. If strict watching becomes necessary, it is best to place the patient in a psychopathic hospital.

The paranoid patient, whose persecutory ideas are directed toward one or a few individuals, relatively accessible to him, should be closely observed. Such paranoid persons are more potentially dangerous than those who feel they are being persecuted by large groups, such as secret societies, political parties, religious sects and the like. Those who harbor grudges against individuals beyond their reach likewise are not as much to be feared. Do not try to argue these patients out of their delusions—it cannot be done. Often ill will toward the physician results, which obviates any probability of his being of further aid to the patient. A nicety of judgment is required in determining the point at which to advise return to the hospital if such becomes necessary. Care in the hands of a psychiatrist in private practice may be feasible in some instances, particularly if the patient has been discharged from the books of the hospital, or the patient strongly prejudiced against the hospital. A patient's return to the institution should not be required for any slight unfavorable change, nor should it be delayed to a point where he is again gravely disordered. The following symptoms, when manifested, make return to the hospital imperative, and delay in so doing hard to justify: homicidal tendencies, suicidal attempts, moderate to marked depression, failure to eat or to take sufficient liquids, marked psychomotor hyperactivity, violence and combativeness, destructiveness, and wandering away from place of residence.

Subsequent visits are made by the social worker or parole agent during the parole period. An attempt is made to visit each patient on parole three or four times a year. This is not always practicable in our cases because of the extent and

nature of the territory covered and because of climatic conditions. Some are visited more frequently than others because of accessibility or of actual need for more assistance. As noted before, as a rule the parole period runs for at least one year. A report is made by the social worker to the medical officers of the institution after each visit, stating whenever possible the patient's own opinion of his progress, what his relatives think of his condition and the worker's interpretation of his mental and physical status. If his progress is satisfactory during and at the end of one year, he is usually recommended by the hospital for discharge from its books. Except in special instances, discharge is then authorized by the Board of Control.

If progress is unfavorable, the hospital may demand the return of the patient in accordance with the terms of the parole agreement or bond, or the parole period may be extended. Likewise the relatives, upon advice of the parole agent, the physician in the field, or upon their own judgment, may return the patient at any time while on parole.

Few detailed studies of the after-histories of patients released from institutions for the insane seem to have been published. Through coöperation with the psychiatric social service department, I am now pursuing an investigation of this type covering a significant number of our cases. The results will be reported in the future.

The following figures represent a rough estimate of the success of patients who were released or who escaped from the Fergus Falls State Hospital during the period from January 1, 1930, to December 31, 1931. Excluded from consideration are patients deported, transferred to other institutions, paroled for short visits and those who were known to have died from any cause within one year after leaving the institution. Allowing for these exclusions, 843 persons were paroled or escaped from our institution during this period. In the calendar year of 1930, of the 425 patients considered, 266, or 62.6 per cent, have since been returned to the institution. Some of these died later, some are still under hospital care, others have been reparaoled. The survey shows that 159, or 37.4 per cent, never returned to the institution. Similarly, of 428 leaving during 1931, the returns number 285, or 66.6 per cent, and those who did not re-enter our

hospital number 143, or 33.4 per cent. For the two year period, of a total of 843 releases (paroles and escapes), 541, or 64.2 per cent, were returned to our hospital, and 302, or 35.8 per cent, did not again enter the Fergus Falls State Hospital.

Because of lack of time for satisfactory investigation, these figures have not been corrected for possible subsequent readmission to other institutions, nor do they indicate degree of adjustment to society.

It is true that our post-institutional care of the insane has improved since the date of release of the group of patients considered above, but it is obvious that there is still room for vast improve-

ment. This improvement must come as a part of mental hygiene directed by the resident personnel of the institutions and carried out by its psychiatric social workers or parole agents and the agencies and physicians in the field.

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HERNIA: INJECTION OR OPERATION?*

R. J. GALLAGHER, M.D.

Waseca, Minnesota

TO the doctor in general practice who wants to advise and to treat his hernia patients in the best way possible, a study of the recent literature on hernia speaks something of a Babel of confusing tongues. The kettle, known as the operative treatment, and the pot, known as the injection treatment, have been inclined to call each other black. Until six or seven years ago it seemed that the question of hernia was about settled except for a discussion of details of operative technic. During the last few years, however, the injection treatment, which has been advocated sporadically for more than one hundred years, is again clamoring for recognition and during the last four or five years most of the papers published on the subject have dealt with the injection method. As is usual with controversial subjects the advocates of each method are inclined to stress the advantages of their type of treatment and the disadvantages of the other type. In this case I believe that we have two types of treatment that are definitely useful and effective when properly used. I shall attempt to discuss the subject from the standpoint of a man in general practice who cannot claim to be an authority on either method but who has tried to acquire some experience and familiarity with both.

It must be conceded at the outset that if any one method of treatment produced very nearly 100 per cent of cures and was without mortality or serious complications then that method would deserve very little challenge from any other. Surgery has failed to reach this high plane and the injection method, I believe, is deserving of a sympathetic opportunity to prove itself under the test of time.

It has been variously computed that there are from two and a half to six million people in the United States with hernias, and as more than 90 per cent of these are of the inguinal variety I shall confine this discussion to the treatment of inguinal hernia. Technical procedures, both operative and injection, have been adequately described by those well qualified to do so. I shall attempt to discuss the subject from the general standpoint of consideration for the best interests of the patient, having in mind four factors: (1) mortality; (2) complications; (3) recurrence; and (4) the economic factor of expense.

Before considering either the operative or injection method one might ask himself how many of these three or four million hernias need treatment of any kind other than a well-fitting truss. Certainly one-half or more get no other treatment than a truss, and that often a very poorly

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fitting one. Authorities seem to agree that direct hernias, which comprise 8 or 9 per cent of the total, usually cause very little trouble and would be well controlled with a properly fitting truss. It is this group that is hard to cure and to keep cured by any method. Andrews and Bissell¹ conclude that, since direct hernias seldom cause pain and carry slight risk of strangulation or increase in size, they should usually not be operated on, particularly as the results of surgery are appallingly bad. Many advocates of the injection treatment admit that direct hernias are harder to close and recur more frequently than indirect. I think we must admit that the fitting of trusses is poorly done and that if doctors themselves would give more study and attention to this problem many hernias could be satisfactorily controlled. A great many people will elect no other type of treatment and if they are to wear trusses at all they should wear ones which are properly fitted.

What then of the operative treatment of inguinal hernias, having in mind the four criteria mentioned?

1. *Mortality*.—We know that herniotomy is looked upon as the simplest of all so-called major operations. Every doctor who completes his internship feels qualified to "fix a hernia" as his first operation. Undoubtedly surgical results would be better if all hernias were operated on by skilled surgeons in the finest hospitals but this is a millennium which will probably not be reached. Even the most skilled surgeons will admit that the operation for hernia carries some risk to life, though it may be small compared to some other operations. Mortality in large series of strangulated cases has been reported around 15 per cent, but this cannot be compared with the injection method, which of course would not be suitable for strangulated hernia. Non-strangulated cases have been reported in large series with a mortality of 1 per cent and less, but I believe that in general work it would be somewhat more than 1 per cent.

2. *Complications*.—This includes the various sequelæ of anesthesia and operation, such as bronchitis, pneumonia, phlebitis, embolism, urinary retention and its consequences, infection of wounds and atrophy of the testicle. Foss and Hicken⁴ in 778 cases report about 10 per cent of complications. O'Shea,¹⁰ reporting 1,016 cases, found 5.4 per cent of wound infections with a

considerably higher rate when living fascial sutures were used. He reports atrophy of the testicle in only one case.

3. *Recurrence*.—Here the figures vary greatly and often the cases are not separated into direct and indirect so it is hard to make comparisons from various reports. Also the factor of time elapsing since the date of operation is not always considered. I think that a fair figure on cases reported would be 10 per cent recurrence in the indirect type and 25 per cent in the direct. Some excellent men have reported much lower percentages than this and some equally excellent men have reported much higher figures.

It is in these cases that recur, and especially in the direct type, that more attention to details in surgical technic might have prevented recurrence. The conventional Bassini operation with four or five interrupted catgut sutures pulling the conjoined tendon and internal oblique down to Poupart's ligament evidently is not enough in these cases. The use of living fascial sutures taken from the thigh undoubtedly results in a higher percentage of cures but this complicates the operation considerably for the average operator. Coley¹⁴ has said that after careful study of the results in 1,200 fascial suture operations the results were far from expectations and during the last couple of years he has been using them less frequently. Silk sutures which were once tabooed are being used again with reports of fewer recurrences. Seelig,¹¹ in about 1923, concluded that muscle would not permanently unite to fascia but Koontz,⁷ in 1926, showed that it would unite through the fibrous components of the muscle if held in contact long enough. This, it is contended, the buried silk sutures will do when catgut will not. Shambaugh¹² in a recent study of 2,360 cases has found that suppurative infections occurred just twice as often with catgut as with silk and minor wound complications (hematomas and accumulations of serum) eight times as often with catgut as with silk.

I think it is reasonable to believe that if fascial strips taken from another part of the body are useful then we should make more use of the fascia which is present in the inguinal region. A careful fascia to fascia imbrication with catgut or silk or both would probably lessen the number of recurrences. Some difficult cases would require a modified technic such as the Halsted or

Bloodgood, or the fascial flap as lately described by Wangenstein.¹³ These are procedures with which doctors who operate for hernia should become more familiar.

4. *Economic Considerations.*—Operation means at least two weeks of hospital expense, a surgical fee, absence from work on even a white collar job for one month, and with heavier types of work for at least two or three months. This means an outlay of from four to seven hundred dollars in the average case. That in itself is no serious argument against surgery if the results are good and if the same result cannot be accomplished in any safer or more economical way.

Injection Method

What of the injection method, having the same criteria in mind, namely mortality, complications, recurrence, and economic factors? Any procedure which involves repeated deep punctures with a needle through tissues of varying thickness and resistance and injection of irritating fluid near important structures like blood vessels, nerves and peritoneum could hardly be expected to be entirely without danger to life nor entirely free from unpleasant sequelæ. It goes without saying that no one should attempt it on a patient without looking into the matter carefully and observing and learning the technic. There are certain absolute contraindications, the main ones being strangulated and incarcerated hernias, for no hernia which cannot be completely reduced and held that way by a truss is suitable for injection. Other contraindications vary with different authors, as syphilis, diabetes and general constitutional conditions which might preclude treatment of any kind not absolutely essential.

1. *Mortality.*—Series of cases totalling many thousands have been reported without mortality. In the earlier days with more irritating solutions there may have occasionally been a fatal complication of some kind but I have been unable to find any mortality in the series of cases reported during the last few years, except one case² in which an excessive dose of thuja solution had resulted in perforation of the ileum with resultant peritonitis and death. Mayer⁹ reported 3,000 cases and Pina Maestra 15,000 cases with no mortality. Bratrud,² Rice, McKinnon and Larson in our own state and many others from

various parts of the country have reported series of cases totalling many thousands with no deaths. I believe it is fair to say that this method is practically free of mortality.

2. *Complications.*—Mayer⁹ and Pina Maestra have reported their large series of cases with no serious complications. Swelling of the cord, hydrocele of the cord, numbness or temporary paralysis in the thigh occasionally occurred. Mc-Millan and Cunningham⁸ in 4 per cent of their cases had some transient swelling in the cord and tenderness in the testicle. Reactions occasionally occurred from injection into the peritoneal cavity, severe abdominal pain, some shock and good recovery in every case in less than an hour. They report no atrophy of the testicle which had not existed previous to injection but found that 8 per cent of their cases had some atrophy of the testicle before any injections were given. Tenderness in the cord and an occasional hydrocele of the cord are the main complications reported by most authors. A few cases have been reported of some sloughing due to the fluid being improperly injected into fatty tissues. Even those who have used the method and given it up have not claimed any serious or frequent complications.

3. *Recurrence.*—This, I believe, is the crux of the whole question of the injection method. It has been sufficiently shown that when properly done the mortality is practically nothing and the complications slight. If a hernia is to be cured by the injection method fibroplastic tissue must be produced in the proper places and if the hernia is not to recur that fibroplastic tissue must stay there and not be absorbed. All who have worked on the problem seem to agree that fibroplastic tissue is produced but all do not agree upon its permanency. Kelly,⁶ after reporting some experimental work in dogs, indicating that while fibroplastic tissue was formed it later largely absorbed, says, "My clinical experience covers 525 injections in twenty-five different cases, which gives an average of twenty-one injections per case. As yet we are not sure we have cured anyone. I am satisfied that we can produce fibroplastic tissue in such an amount that it would cure a large number of hernias if it would be maintained. But as yet we have not been able to maintain it. I believe that there is a chance of our finding some solution or solutions that will produce and maintain the fibro-

plastic tissue necessary for a cure. I do not believe that such solution or solutions have been found yet." Coley,³ at the Hospital for Ruptured and Crippled in New York, after using the injection treatment on sixty-six patients with ninety-two hernias, agrees with Kelly and has stopped using it for the present at least.

On the other hand the large majority of the reports that are published, including Bratrud,² Rice, McKinnon, and Larson in our own State, and many others in various parts of this and other countries, indicate a high percentage of cures and a recurrence rate of not more than 10 per cent and in many series much less than this. The point is made by advocates of the injection treatment that the patients should be reëxamined from time to time for several years so that if at any time there is evidence of recurrence a few more injections can be given, a procedure much simpler than operation for recurrence. Undoubtedly failures occur with the injection method due to insufficient treatment or to failure of the patient to strictly follow directions as to wearing a properly fitting truss at all times during the progress of the treatment. But the large number of favorable reports have been made by men of large experience in this work who made every effort to have every point in the technic properly carried out and so many thousands of cases have now been reported by so many workers that we are inclined to believe that this method is here to stay unless the march of time proves that the fibroplastic tissue cannot be maintained.

It has been conceded by nearly every one, and my own limited experience bears it out, that after four or five injections the patient is able to wear the truss much easier, the hernia is retained, the patient is more comfortable and I believe that if this alone is accomplished it is well worth while in a large number of older people who may not be doing heavy work anyway, and who may be willing to wear a truss rather than to submit to anything more radical. I do not believe enough time has elapsed since the bulk of the work in this country has been done for anyone to be too sure how permanent the results may be, but there is every reason to believe at this time that a great many hernias will be cured by it.

4. *Economic Considerations.*—The injections can be given in the doctor's office with very lit-

tle loss of time to the patient. As he has no hospital expense, and can continue with his work there is a great saving in the cost. An excellent truss should not cost more than five or six dollars. Two or three dollars' worth of injecting fluid constitutes most of the doctor's extra-expense in the case, and the fee may well be no more and probably something less than the usual surgical fee would be.

Conclusions

1. Many hernias, particularly of the direct type, require nothing more than a properly fitting truss.

2. The treatment of strangulated and incarcerated hernias is strictly surgical.

3. More careful operative technic, with the use of buried silk sutures, or living fascial strips in the more difficult cases, and a more careful fascia-to-fascia imbrication, would result in a higher percentage of permanent cures.

4. For 80 per cent or more of inguinal hernias the injection method should be suitable for trial for there is reason to believe it will cure a large percentage, and alleviate a lot more. The injection method eliminates surgical complications and is a great deal less expensive for the patient.

5. Time alone will tell whether or not the injection method will be as useful as it now appears to be.

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TREATMENT OF BLADDER TUMORS*

PHILIP F. DONOHUE, M.D., F.A.C.S.

Saint Paul, Minnesota

THE hopeless feeling of the past toward the treatment of tumors of the bladder has given way to a well founded optimism for the future. This new enthusiasm is based upon the reports of treated cases showing a steady improvement in results. Most impressive are the reported cures of cases with tumors of the more malignant type. Equally encouraging are the results not infrequently obtainable in advanced cases with extensive tumors. Many of these cases were formerly considered utterly hopeless and doomed to morphinism for the relief of pain. Control of the growth is now possible of accomplishment, with the prospect of a few more years of life in comfort. Such results are obtained because of a better understanding of the pathology of bladder tumors leading to the development of more effective methods of treatment. Far better results can and should be obtained. It is the purpose of this paper to arouse the members of the medical profession and through them the public to the possibilities of this disease, to the end that cases may be seen soon after the appearance of the first symptoms, when the tumor is often amenable to successful eradication.

Further improvement in results in the treatment of the malignant tumors will be achieved when diagnosis is more often made while the condition is in an early stage. Unfortunately, there is no typical clinical picture of the disease. First suspicion of the presence of tumor may be aroused by the appearance of hematuria or of some degree of bladder irritation. Hematuria, a striking manifestation, is generally recognized as a possible indication of neoplastic disease. Its occurrence is frequently sufficient to alarm both patient and physician, cystoscopy is performed, and the growth is discovered. Much less appreciated is the possibility that bladder tumor may be the underlying cause of persistent bladder irritation. If patients with this condition are to have treatment during early stages, the importance of prompt cystoscopy should be repeatedly

emphasized, not only for hematuria, but also in cases of unexplained cystitis or pyuria not responding to treatment.

The majority of bladder tumors are epithelial and originate from the mucous membrane of the



Fig. 1. Benign papilloma (schematic).

bladder. Statistical studies indicate that these tumors make up more than 90 per cent of all bladder neoplasms. Other forms, originating from connective tissue or muscle tissue, are extremely rare and are not under consideration in this paper. Epithelial tumors, from the clinical standpoint, may be classified as either superficial or infiltrating.

CLASSIFICATION OF EPITHELIAL TUMORS OF THE BLADDER

- I. Superficial tumors.
 - 1. Benign papilloma.
 - 2. Multiple papillomatosis.
 - 3. Malignant papilloma.
- II. Infiltrating tumors.
 - 1. Papillary carcinoma.
 - 2. Infiltrating carcinoma.

Superficial Tumors

The most common superficial tumor is the benign papilloma. It appears as a villous growth attached to the bladder wall by a pedicle (Fig. 1). Microscopically there is a connective stalk covered by several layers of epithelial cells. The cystoscopic picture is unmistakable, and the tumor is readily destroyed by cystoscopic electrofulguration (Fig. 2). When the tumor is large

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it may be removed at one sitting by use of a wire snare or the prostatic resectoscope. Transurethral methods occasionally fail when the tumor is anterior and immediately adjacent to the vesical neck and electrofulguration through a

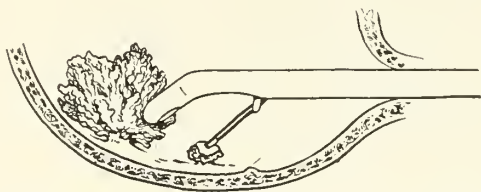


Fig. 2. Cystoscopic electrofulguration of papilloma of bladder.



Fig. 3. Extensive papillomatosis of the bladder (from Watson). Condition caused retention of urine, leading to infection and death from uremia.

suprapubic opening is required. Irrespective of the method of treatment employed, recurrence is not unusual and follow-up cystoscopic examinations should be advised in all cases. Occasionally the tumors are sufficiently numerous so as to entirely cover the bladder mucosa, the condition of multiple papillomatosis or fur-lined bladder (Fig. 3). This type of superficial tumor is clinically important because of the great difficulty in treatment. Electrofulguration may be tried and also radium and deep x-ray therapy, but these methods are often either completely ineffective or are followed by recurrence. Eventually there is infection of the bladder and kidney, leading to marked inflammatory changes and, ultimately, kidney insufficiency. Such a termination may be avoided by complete removal of the bladder and this should be performed without delay in cases that do not respond to the less radical measures. A rather rare form of superficial tumor is the malignant papilloma (Fig. 4). At cystoscopy it differs very little from the benign growth. On microscopic examination there is evidence of

low grade malignancy involving the papillary portions of the tumor with no infiltration of the base. It is destroyed by electrofulguration. Following destruction of the growth there may be a persisting ulcer of the bladder and the possi-



Fig. 4. Malignant papilloma (schematic). Malignant degeneration of a portion of papillæ. Remainder of tumor benign. Bladder wall normal.

bility of malignant infiltration of the bladder is at once suggested. Biopsy of the tissue removed from the edge of the ulcer will settle the question of malignancy. Even in the absence of infiltration, it is advisable in all cases with this type of tumor to supplement electrofulguration with implantation of radon seeds into the coagulated pedicle.

Infiltrating Tumors

The infiltrating tumors are divided into two groups according to their gross pathology. First, the tumors in which there is both papillary projection and infiltration. In the second group, the growths are characterized by infiltration, and there is little or no projection of tumor tissue. Histologically, these tumors are similar. Early cases of papillary carcinoma show infiltration of the papillary fronds which extend to the base and the bladder wall (Fig. 5). Growth of the tumor is by extension along the bladder wall, with involvement of the submucosa and muscularis. Infection of the papillary masses is inevitable, and there is interference with the blood supply. Large sloughs occur and are gradually passed away during voiding. The result is wide ulceration of the bladder surface. In some cases the ulcer is covered by incrustations of urinary salts. At this stage there is little or no papillary tissue, and the tumor is termed infiltrating carcinoma (Fig. 6). More typically belonging to the group of infiltrating carcinomata are tumors with

no intravesical projection at any time. Such growths are invasive from the first and eventually lead to great thickening of the bladder wall. Ulceration of the mucosa may be slight and occur only after the tumor has involved a consider-

er are increased in the cases in which cystitis is a complication. In this event, the ulcerated area may be hidden from view by adherent urinary incrustations, sloughing tissue, or by inflammatory exudate or blood clots. Again, the diagnosis



Fig. 5. Papillary carcinoma (schematic). Semi-solid papillary mass. Areas of necrosis and edema of adjacent bladder mucosa. Infiltration of bladder wall.



Fig. 6. Infiltrating carcinoma (schematic). Large crater or ulcer. Intravesical projection of necrotic papillary tissue. Extensive infiltration of bladder wall.

able portion of the underlying submucosa and muscularis. In far advanced cases, there is marked thickening and fixation of a considerable portion of the bladder wall and extension of the growth to the extravesical tissue. Infiltration of one or both ureteral orifices may occur, leading to hydronephrosis, and, ultimately, kidney insufficiency.

While all infiltrating tumors eventually undergo metastasis, the occurrence is rather late in the tumors belonging to the papillary carcinoma group. In tumors that are invasive from the first, there may be comparatively early dissemination of the growth throughout the body. From a study of the clinical course, it becomes apparent that many of the cases reach a fatal outcome before metastasis has occurred. Infection is frequently the factor responsible, and, once established, may lead to extravesical as well as to intravesical inflammation, pyelonephritis, pyonephrosis, and even sepsis and death. In a series of ninety-eight cases coming to postmortem, studied by Colston and Leadbetter, these men found obstruction, infection, and uremia almost invariably a major factor in the cause of death.

The diagnosis of infiltrating tumors is made by cystoscopic examination. Infiltrating tumors with papillary projection are readily recognized. More difficult of recognition are the non-papillary growths. The presence of these tumors may be suggested when cystoscopy shows ulceration of the mucosa accompanied by irregularity of the bladder surface. The difficulties of the examin-

may be difficult in cases of creeping carcinoma of the bladder in which ulceration of the mucosa is late. Diagnosis in these cases will often require a biopsy of tissue removed from the suspicious area. A cystogram may be helpful in estimating the extent of bladder wall involvement.

The surgical treatment of infiltrating tumors of the bladder will depend upon the location of the tumor and the extent of invasion of the bladder wall. Another factor is the presence or absence of metastasis. When there is no evidence of metastasis, resection of the tumor-bearing portion of the bladder wall is carried out (Fig. 7). This is the procedure of choice when the tumor is single and situated in a mobile portion and when invasion of the bladder wall is limited. Beer is enthusiastic over this method and reports thirty-three cases so treated and ten cases cured for five years, or 33 per cent. The method is not applicable when x-ray of bones and lungs shows evidence of metastasis; neither will it apply in those cases with involvement of the trigone or vesical neck by the tumor or when the regions of both ureters are infiltrated. It is probable that better results may be obtained in such cases by combining radium or radium emanations with x-ray and electrofulguration (Fig. 8). In this method the protruding tumor mass is electrofulgurated suprapubically and radon seeds are implanted directly into the tumor base. A full course of deep x-ray treatment by the Coutart

method follows. In a small series of cases so treated by the author, the condition seemed to be controlled. In all there was symptomatic relief, the postoperative period was not prolonged, and there was no operative mortality.

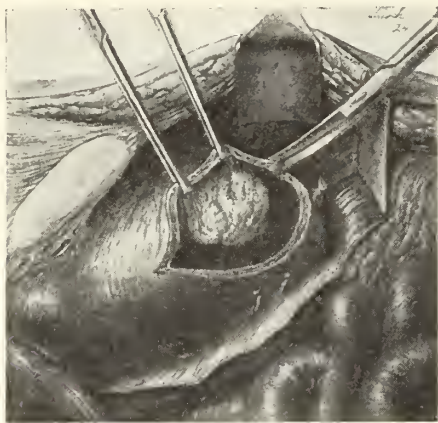


Fig. 7. Segmental resection of papillary carcinoma (from Young).

One patient with a creeping type of infiltrating carcinoma of the bladder is at his work every day, two and a half years since operation. Nevertheless, published reports of five years' studies of cases treated by this method indicate poor end-results.

In a large number of cases of infiltrating tumors, attempted eradication of the disease by complete removal of the bladder offers the only hope of cure. This procedure is indicated in carefully selected cases when the growth is unfavorably situated for removal by segmental resection. Its employment is advisable in cases with tumors located in areas adjacent to the vesical neck with invasion of this structure; in tumors of both trigone and bladder base which involve the ureteral orifices; in cases of multiple papillomatosis in which the entire bladder surface is covered; and in cases unsatisfactorily treated by less radical methods.

Before the bladder is removed, diversion of urine is provided for by implantation of the ureters into the sigmoid colon, or by bringing the lower ends out to the skin of the abdomen. Since implantation of ureters into the bowel furnishes a reservoir for urine, this method is preferred to skin implantation. When performed on patients of advanced years, the procedure is attended by a fairly high mortality. Patients should be submitted to this operation only when considered

good surgical risks and when there is evidence of good condition of the upper urinary tract. The question of metastasis may be settled in doubtful cases by a preliminary examination of the lymphatics and the liver through the opened

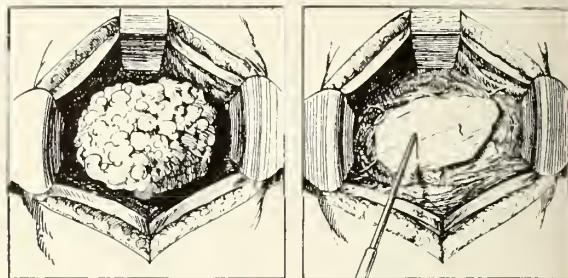


Fig. 8 (left). Papillary carcinoma viewed through suprapubic incision. (Right) Implantation of radon seeds following removal of papillary mass by electrosurgical knife.

abdomen. When dissemination of the disease has occurred, the anastomosis is not done.

Poorer surgical risks may be submitted to ureterostomy or skin implantation, a procedure with a reported mortality of less than 10 per cent. This operation should be performed in cases with dilatation of the ureters. It may be considered as a means of relief when bladder carcinoma is accompanied by marked infection and unbearable pain. Following skin implantation of the ureters, rubber catheters are passed to the pelves and maintained in position for collection of urine. Obviously the results with this method are inferior to those where ureterosigmoidostomy is successful. Progressive dilatation of the ureters and pyelonephritis seem inevitable consequences of ureterostomy, with sepsis and uremia lurking in the background. Disposition of the ureters by either of these methods is then followed by removal of the bladder.

Summary and Conclusions

The following propositions developed in this paper are repeated for emphasis. Good results in the treatment of bladder tumors, more than anything else, depend upon seeing patients early in the course of the disease. Hematuria and persistent bladder irritation call for immediate cystoscopic examination. The destruction or removal of superficial tumors by appropriate methods is rarely difficult, and is followed by good results. The tendency toward recurrence of these tumors should be kept in mind, and cystoscopic examinations performed periodically

on these patients. Cases of multiple papillomatosis are often resistant to the treatment ordinarily effective in tumors of the superficial type. Complete removal of the bladder should be considered in such cases. Poor results in the treatment of infiltrating tumors are unavoidable when the growth is extensive. There is no excuse when poor results follow the use of improper methods, such as the attempt at destruction of any infiltrating growth by electrofulguration alone, whether applied transurethrally or suprapubically. Treatment of infiltrating tumors depends upon the location of the growth and the

invasion of the bladder wall. Segmental resection is advisable for tumors that are localized. Complete cystectomy is indicated in selected cases, when there is extensive invasion of the base or vesical neck. The ureters are disposed of by implantation into skin or bowel according to conditions in the individual case. Radical surgery is often contraindicated. The purpose of treatment then is to alleviate suffering and to prolong life. Such results may be obtained by combining suprapubic diathermy and radium implantation with postoperative deep x-ray treatment.

ACUTE CONDITIONS IN THE ABDOMEN*

A. E. SOHMER, M.D.

Mankato, Minnesota

MEDICALLY, "acute" means of sudden onset, coming to a crisis quickly. It is important to discover and properly diagnose intra-abdominal disease *early*, to do what should be done promptly, and to avoid doing the wrong thing, which would jeopardize the patient.

Acute intra-abdominal disease may be spontaneous, or may follow trauma; it may be a condition requiring medical care, or one calling for surgical intervention.

Confronted with an apparently acute abdominal condition, it is of the first importance to make a careful and thorough attempt at diagnosis. It might be spectacular to make a hunch diagnosis, but it is safer and serves the patient better to be methodical and thorough, before proceeding to treatment. The surgeon must review the case carefully and never take another's diagnosis as final, though the observation and conscientious opinion of the first attending physician is of extreme value. Clinical observation and laboratory aids should be balanced carefully. Early diagnosis is important.

Narcotics must be used only when they do not obscure symptoms. As a rule, severe abdominal pains lasting several hours, in a patient who has been previously well, are due to surgically important conditions.

A thorough routine examination must be made. Anatomical knowledge must be applied carefully

to estimate local inflammatory conditions, as well as referred pain; for the same reason, physiologic knowledge aids in clarifying obstructive lesions.

While early operation is usually indicated in acute surgical conditions, one must exclude medical diseases which simulate them. Surgical technique must be secondary to good medical judgment. Here lies the difference between the mere operator, and the real surgeon.

The methods of diagnosis include a careful history, as well as a painstaking physical examination. The value of the history is attested by the fact that quite frequently a correct diagnosis can be made by it alone; it always is a big factor in interpreting physical findings.

Sex at once classifies certain diseases peculiar to each, either in a positive or a negative way.

Age directs attention to certain conditions most frequently found in certain years. For instance, in infants and up to two years of age, acute intussusception is found, whereas acute appendicitis is most common in the young adult. Carcinoma of the large bowel, causing obstruction or perforation, is a disease of advanced adult and old age. Acute perforation of a peptic ulcer, as well as cholecystitis, is rare in childhood. Ectopic gestation occurs in women during the child-bearing period.

Exact time of onset, in relation to meals, or to the taking of a laxative, to the emptying of the urinary bladder, or to unusual extreme exertion,

*From the Mankato Clinic, Mankato, Minnesota. Read before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 4, 1937.

or the awakening from sleep, may fix the organ of involvement, as well as define a fair time for the development of certain symptoms.

Acuteness of onset should be considered. Sudden pain with collapse or fainting in a woman, makes one think of a ruptured ectopic gestation; while in a man, acute pancreatitis or a perforating peptic ulcer may be the cause. Intestinal strangulation, or torsion of an ovarian cyst or an intra-abdominal testicle, usually have a sudden onset, whereas intestinal obstruction is slower in developing. Elapsed time since onset determines prognosis, as well as the urgency for operative interference, compared to conservative observation.

Pain. The character of pain, its location at onset, and later distribution, will point to its source frequently; the influence of respiration, as well as micturition, on pain, may point the way.

Vomiting in acute abdominal lesions is due to peritoneal or mesenteric irritation, or to obstruction to a hollow muscular tube, or to the effect of absorbed toxins upon the medulla. The time of vomiting in relation to the onset of pain may give a clue to the location of the trouble; in intestinal obstruction, especially, one can judge the level of the obstruction by the time of vomiting. The character of the vomitus will often show its source, whether in stomach, upper intestines or large bowel.

Bowels. Any marked change from previous normal bowel action is significant. Blood or mucus in the stools usually accompanies intussusception.

Menstruation. A careful inquiry into the character and time of menses is especially important in checking the possibility of ectopic gestation, or ruptured ovarian follicle, or twisted ovarian cyst.

Past history. This should be reviewed, for history of so-called indigestion, relation of pain to food, history of colic, jaundice, hematuria, glycosuria, melena, angina pectoris, and weight loss.

Physical examination. Facial appearance, suggesting pain, shock, loss of blood, and jaundice, should be noted. Attitude and posture may give certain diagnostic leads. Pulse, temperature and rate of respiration are important signs. The condition of the tongue is an open book to the experienced clinician.

Abdominal examination. Have the patient point out, if possible, the exact spot of the pain at its onset and also the subsequent radiation, and note swelling, tympany, fluid or coil distension. All potential hernial orifices should be inspected. Note the respiratory movement of abdominal wall, or its limitation, generalized, or in part. Abdominal palpation must be gentle, and must be performed with warm fingers. Muscular rigidity is often relative, and corresponding areas should be compared. As long as the parietal peritoneum is not irritated by inflammatory response, the rigidity may be slight.

Hyperesthesia is tested by light pricking with a pin, and corresponds to the related nerve segments. Tenderness is usually more marked on sudden release of pressure. Careful palpation and percussion of the lumbar regions will clarify renal conditions. Iliopsoas rigidity or thigh flexion shows irritation or pressure along corresponding areas.

Liver dullness shows possible enlargement due to abscess, or rupture with bleeding. Absence of dullness, with tympany, may mean free air due to a ruptured hollow viscus. Percussion of the liver during deep respiratory movement may show fixation of the diaphragm or pleuritic involvement.

The presence of *free fluid* may be determined by percussion, tapotement and by change of position.

Pelvic examination includes bimanual palpation in the female, for tumor, cyst, fluid accumulation or tenderness, including that elicited on moving the cervix to either side.

Rectal palpation may locate an abscess, local peritonitis, intussusception or rectal stricture. In the male the condition of the prostate, seminal vesicles and urinary bladder is determined. Aspiration of the cul-de-sac of Douglas may show blood or pus.

Chest examination should be made to determine pulmonary and cardiac conditions.

The spine may show localized tenderness or rigidity, with local spinal disease causing abdominal pain.

Pupillary and knee-jerk reflexes should be checked for possible tabetic visceral crisis.

Urinary examination for blood, pus, or crystals is made. Catheterization may diagnose a ruptured or distended urinary bladder.

Determination of the *blood pressure* will show shock, hemorrhage or circulatory failure.

X-ray examination of the abdomen and chest is a very helpful medium in diagnosing acute abdominal disease. Especially useful is x-ray examination of the abdomen in different postures, to show gas and fluid levels in intestinal obstruction, intussusception, or a localized distention of the colon.

To take up the various diseases which might cause acute abdominal lesions in detail could be done better in fifteen hours than in the fifteen minutes to which this paper is limited. Therefore, in the remaining time, I shall briefly refer to several rather obscure acute abdominal conditions which one may encounter without enumerating very many other diseases which come up for differential diagnosis.

Acute Pancreatitis

Acute pancreatitis occurs in less than 1 per cent of acute abdominal disease, and therefore is quite rare and may easily be overlooked, but, even when thought of, is sometimes difficult to recognize.

One should first of all recall the anatomical relations of the pancreas. It lies retroperitoneally, near the celiac plexus and semilunar ganglia. Its head lies in the curve of the duodenum—its body in front of the first lumbar vertebra, and its tail reaches the left lumbar region and touches the spleen.

Acute pancreatitis is probably due to infection, which leads to a spreading hemorrhage into the gland, disorganizing it, and freeing its ferments which attack and destroy the gland, eventually leading to gangrene.

Acute pancreatitis is a disease of middle life, usually occurring in those inclined to obesity. Gallstones may be associated, but not always so, and the diversion of bile into the pancreas by a block at the ampulla of Vater is only occasionally found.

Symptoms are due to various causes, such as inflammatory pressure, swelling of the gland, extravasation of blood and disturbed function. Pain is usually sudden and severe, and may cause fainting. The location of the pain is epigastric, radiating to one or both loins, and at times to the left scapula via the phrenic nerve. The pain will extend to the whole abdomen and become somewhat less severe at a later stage.

Shock is marked, accompanied by a weak, rapid pulse, subnormal temperature, cold and sweating skin. Vomiting is persistent, or unproductive retching may be severe; the vomiting is reflex, and very seldom becomes feculent. Epigastric tenderness is always present. Epigastric rigidity may be board-like at the onset, but usually the abdominal wall itself is soft, differing in this way from the extreme stiffness one usually finds in acute perforation of a peptic ulcer.

Tumor in the epigastrium may be found, due to the swelling of the pancreas. Jaundice is a frequent symptom and is probably due to compression of the common duct by the swollen pancreatic head. Rarely will the large head cause obstructive vomiting by pressure on the duodenum, and usually emesis is reflex.

A rather rare but pathognomonic finding is discoloration in one or both loins, and is due to extravasation of blood from the disintegrating gland into the retroperitoneal areolar layers. It occurs, when present, only after two or three days.

Glycosuria is an occasional finding but is not constant. Diastase in the urine is increased and is due to the liberation of pancreatic ferments. Its increase in the urine may be ten-fold.

Cyanosis of the face and the extremities is frequently noted, and is accompanied by dyspnea, due to the limitation of diaphragmatic movement, caused by the nearby inflammation. Since in the later stages of acute pancreatitis, the symptoms and signs diffuse into a more general abdominal picture, with lessened pain, distention and accumulating fluid, it is important to check the condition at onset, and then its subsequent development.

Differential diagnosis. In acute pancreatitis the rigidity may be marked, but is definitely limited to the epigastrium and not so widespread as in a perforated ulcer. A perforating ulcer produces pain referred to the top of the shoulder, which is rare in pancreatitis, and, when present, is limited to the left shoulder.

Cyanosis, jaundice and bilateral lumbar pain are characteristic of pancreatitis; absent liver dullness in the axillary line points to hollow viscus perforation, with escape of gas. Glycosuria and increased urinary diastase go with pancreatitis. Acute appendicitis differs in the history of its onset and development. Pain and vomiting are less severe in appendicitis, and the

localization of the pain, and rigidity in the right lower quadrant, are characteristic.

In acute cholecystitis and biliary colic the tenderness is located in the right hypochondriac region. There is usually a history of previous attacks, and hyperesthesia is along the superficial distribution of the eighth or ninth thoracic nerves on the right. One must keep in mind, however, the simultaneous existence of gallbladder and pancreatic inflammation.

Finally, when the signs involve the entire abdomen, differentiation may be impossible. The indication for exploratory operation, however, remains.

Acute Intestinal Obstruction Due to Bands or Adhesions

Acute intestinal obstruction may be due to many causes, such as hernia, intussusception, volvulus, impacted large gallstone, fibrous or tuberculous stricture, Meckel's diverticulum, and obstruction by bands and adhesions. We will consider briefly only the latter at this time.

Bands or adhesions may be congenital, or develop as the result of a previous or concurrent peritonitis.

Congenital bands which cause obstruction are rare, but may be associated with a maldeveloped mesentery which leaves openings of various degrees into which the gut may wander and become strangulated.

Peritonitis causing obstructive bands may follow an inflamed Meckel's diverticulum, appendicitis, adnexal infection, or torsion of ovarian cyst or tumor with gangrene.

The obstruction due to these latter causes is apt to come on in a subtle way, and considerable damage may ensue before the cause is recognized and the resulting obstruction relieved, while the various hernial strangulations, volvulus and intussusception are more definite in their location and findings. The symptoms usually begin with an ill-defined colic and nausea. Pain may not be severe and the local signs indefinite. The onset is rather slower than in hernial obstruction or volvulus. Soon vomiting occurs, at first of bile and upper intestinal contents, and later fecal in character. The time of onset of vomiting depends somewhat on the level of obstruction. If low down, it is later in relation to the ingestion of food than when high up in the canal. Like-

wise, the resulting constipation, in a reverse manner, comes on earlier, the lower the obstruction. Gas and even feces may be expelled for a period in a high obstruction.

The previous history of the patient gives the best clue to the diagnosis of this type of obstruction. A history of a ruptured appendix, with or without operation, or infectious pelvic disease, should make one expect a possible band or kink.

A quite reliable aid to early diagnosis is the taking of an x-ray film in the upright and lateral positions. The finding of ladder-like markings, showing gas and fluid levels in the small intestine, which change with the position of the patient, is a pathognomonic sign. The location of the obstruction can sometimes be made out in this way so that surgical attack can be made, with a minimum of intra-abdominal manipulation.

Surgical relief will be accomplished by cutting obstructing bands, releasing kinks, enterostomy or resection, depending on the condition found.

Mesenteric Thrombosis

This acute condition, which resembles acute intestinal obstruction in many ways, is usually difficult to diagnose, and must therefore be kept in mind. It is caused by arterial embolism from a cardiac lesion, or from venous thrombosis from a pelvic, intestinal, or appendiceal infection, and the presence of any of these conditions should direct attention to the possibility of its presence.

The onset is rather sudden, with intense pain in the umbilical region, radiating to the epigastrium, hypogastrium, or to the lumbar regions. Vomiting, which may be blood-streaked in character, then diarrhea, which also may become bloody, are characteristic of the condition. Shock with subnormal temperature and circulatory depression follows, with early death. There may follow obstruction of the intestinal canal with distention, fecal vomiting and hiccough.

Acute intestinal obstruction following a bloody diarrhea is due usually to intussusception or mesenteric thrombosis.

Early operation is indicated for the exclusion of the gangrenous loops, and anastomosis after enterectomy. If the patient is in poor condition, resection with enterostomy may be the extent of safe surgery. In extensive involvement of intestines, operation may be useless.

THE COLLECTION AGENCY RACKET

Stanley B. Houck*
Minneapolis, Minnesota

THROUGH their committees on unauthorized practice of the law, bar associations are discovering that business and professional men, including doctors, are being exploited and victimized by certain types of collection agencies and "collection systems." The clients of numerous lawyers are reporting similar conditions.

The ease with which business and professional men are "sold" collection systems and the services of collection agencies would be astounding were it not so generally known that collections are the bane of most creditors' business and professional existence.

A high pressure salesman calls upon a busy man; makes extravagant promises and representations; obtains a contract and double-clinches the arrangement by taking away with him the creditor's uncollected accounts and all information necessary for their proof in case of dispute. There seldom is any similarity between the salesman's talk and the contract.

Some of these agencies may be called, for want of a better name, the "hit and run" agency. They send an extremely capable salesman into another state; who gets his prospect's signature and accounts and returns to the state of his origin before his victim realizes what has happened. From that point on, no representative of the agency enters the state wherein the debtor and the creditor reside and all business is transacted by mail.

Usually, the contract has a variety of provisions designed to protect the agency, exclusively, and to give the creditor no right to an accounting until all of the accounts turned over have been collected. The agency, also, protects itself by retaining its full commission on claims withdrawn and on claims collected by the creditor. As a practical proposition the contract is so drawn that the creditor, oftentimes, can never get anything from the agency on the claims turned over to it.

The agency generally recognizes no claims or demands of the creditor upon it. The creditor can get neither the money collected nor the return of his accounts and the data supporting them. His only relief is to go to a foreign state and institute an action; and this, obviously, is oftentimes impracticable, if not entirely impossible.

All this can be easily prevented by the observance of simple rules:

(1) Never employ, for the collection of accounts, any collection agency which does not have a place of business and a resident agent in your state and, preferably, in your vicinity. As a practical matter, effective collection of debts requires the services of a personal collector, which means that the agency must have some local place of business.

(2) Never sign a contract covering collections unless you have studied it as carefully as you would the most important contract you may ever enter into; and unless certain that what the salesman said and what the contract says are the same. It is also very desirable that such contracts be passed upon by an attorney. It is entirely unnecessary that a collection contract be long or elaborate. If it is, treat it as a suspicious document.

(3) Any agency which undertakes to effect collections entirely through the mails from an out-of-the-state place of business will either be ineffective or its effectiveness will depend entirely upon its illegal acts; usually acts constituting the unauthorized practice of the law and the use of documents simulating legal notices and process. Such acts may involve the creditor in serious liability.

(4) Ask the State Bar Association what it thinks of the agency and its contract.

Equal caution should be used to avoid purchasing "collection systems."

The backbone of such systems usually is a series of acts which constitutes unauthorized practice of the law. These acts include letters threatening to turn claims over to an attorney; threats to sue, garnish, attach, supplementary proceedings, etc. They also often contain lurid forms of notices and other documents which give the impression that a legal action has been, or is about to be, instituted; and that dire consequences are about to befall the harassed debtor.

The "hit and run" collection agency which comes into the state and permanently vanishes therefrom thereby avoids, as a practical matter, any obligation to comply with the law or live up to its agreement. If the agency were one which had representatives within the state upon whom process could be served, the creditor would be amply protected. As it is, the accounts have been taken without the state; the money paid by the debtor is remitted by him by mail to a point without the state and the agency cannot be compelled to account for funds collected or to return the records of the indebtedness unless the creditor goes to the other state and institutes suit there.

A creditor who uses a "collection system" built around threats to sue and the use of documents simulating legal notices or process subjects himself to possible fine and possible imprisonment for contempt of court.

In addition to the legal situation arising out of such contracts and systems, there is the broad question of public interest and public policy. No reasonably disposed creditor would, in many of the situations referred to, allow agencies of the sort described to handle his collections if he knew the methods such agencies pursue. The money the creditor receives is not worth the suffering and harassment of the debtor upon whom the illegal methods described are used.

* Chairman of the Standing Committee on Unauthorized Practice of the Law of the American Bar Association.

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BUSINESS MANAGER

J. R. BRUCE

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Canker Sores

ONE of the sad features about the practice of medicine is that we physicians know so little about and often can do so little for some of the commonest troubles of our patients. These troubles, such as headache, flatulence, backache, and the common cold, may not be serious and they may not cause death, but they can be very annoying and disabling, and the victims would be slow to subscribe to the view that they are of no great consequence.

Among these "minor" disturbances for which a cause has never been found and for which there has been no treatment might be listed canker sores in the mouth. As Rowe pointed out in his recently published book on "Clinical Allergy," a number of writers during the past twenty years have suggested that these sores might be due to

the eating of some food or the taking of some drug, but no one paid much attention to these statements.

This is unfortunate because there can no longer be any doubt about the fact that in many cases these painful sores are due to the eating of foods such as chocolate, eggs, milk, wheat, prunes, apples, bananas, cantaloupe, and grapes, or the taking of drugs such as phenolphthalein, or to the use of certain dentifrices, or to the presence in the mouth of certain metals in fillings or artificial dentures.

In rare cases an allergic disturbance in the mouth can even give a picture resembling that spoken of during the war as "trench mouth." I have recently reported a case in which a life-long misery due to canker sores was stopped the day that chocolate was removed from the diet.

It is certain, then, that canker sores can be due to the eating of some food to which the victim is sensitive. It may well be, of course, that there are other causes, but certainly, now, when a patient comes with this trouble, he should be instructed to keep a careful record of unusual foods eaten for twenty-four hours preceding the appearance of each crop of sores, and he should be asked to stop the use of laxatives and all other drugs during the period of investigation. After he has had four or five attacks he may find that some one unusual food, not used every day, was eaten just before each outbreak of sores.

W. C. ALVAREZ.

Sulfanilamide In Urology*

FROM time to time the medical profession is presented with new remedies for disease. Some of these have only a short life and rapidly disclose their ineffectiveness; others prove of definite value and become a part of the armamentarium of the practicing physician. Perhaps the most useful new drug in many years is sulfanilamide, and early trials have indicated its great value in many fields of medicine. Sulfanilamide, however, is a potent drug, and because of this it is unfortunate that it has been given so much

*From the Section on Urology, The Mayo Clinic, Rochester, Minnesota.

publicity in the lay press. It is up to the medical profession, therefore, to attempt to control its use. Time alone can reveal its dangers, and until these are known we doctors must proceed cautiously with it.

Sulfanilamide is of the greatest value in urology. The early work of Colston and experience with the drug at The Mayo Clinic in cases of gonorrhea have been most encouraging. Its present widespread use in this field, however, must be looked on with some apprehension, particularly when it is dispensed without limitation. Every patient taking this drug should be seen regularly by his physician. Approximately 10 per cent of individuals cannot take the drug at all, and a certain number of the remainder will develop toxic manifestations such as headache, tinnitus, vertigo, nausea, and malaise, which must be watched closely. Any signs of cyanosis or dermatitis must be watched for, and the development of either of these conditions usually makes it necessary to discontinue administration of the drug. Elevation of temperature and signs of anemia must also be watched for. Agranulocytosis and severe hemolytic anemias have been reported and these may be of a serious nature.

In the treatment of infections of the urinary tract other than gonorrhea, sulfanilamide has been of inestimable value. However, it has the same limitations as far as its ability to eradicate infection as has mandelic acid. On the other hand, since it does not depend so completely on the pH of the urine for its effectiveness as does mandelic acid, it is of great value in treating those infections in which urea-splitting organisms, such as the *Proteus* group, are present. In addition, in those cases in which the infection of the urinary tract is associated with prostatitis, sulfanilamide has proved far more effective than mandelic acid, as it is apparently excreted in the prostatic secretion and exerts a specific local effect.

It is still felt by most urologists, however, that mandelic acid should be the drug of choice in uncomplicated cases, and that sulfanilamide should be kept as an "ace up the sleeve." Until more is known of the dangers of administering sulfanilamide, therefore, let us watch closely each individual under treatment. If this is done, practicing physicians will find sulfanilamide to be a most valuable adjunct to therapy.

EDWARD N. COOK

Bath Accidents

SOMEWHERE it has been said that half the accidents occur within the home. However that may be, the bathroom has proven itself a dangerous place.

The bottom of a bathtub must be placed on a slant for proper drainage and the sides curved for sanitary purposes. This setting only serves to make the wet porcelain the more conducive to falls.

Broken arms and legs are not uncommonly encountered by physicians. Some much more serious and unusual accidents, however, have come to our attention. Not long ago an elderly woman failed to place a rubber mat in the bathtub when standing under a shower and fell against a fixture, literally dislodging one eye. An army officer some years ago fell in a tub and became impinged on the handle of a faucet which penetrated between his cricoid and thyroid cartilages, causing his death from strangulation before he was discovered. Another unusual accident occurred when a man stepping from a shower slipped on the wet tiling and put his foot through a French door. The resulting laceration almost proved fatal before the hemorrhage could be controlled.

Electric plugs have no place in a bathroom, especially one placed within reach of a tub. One known fatal accident occurred when a youngster reached from a tub with a wet hand hand to disconnect an electric heater.

Porcelain handles to faucet or shower fixtures have been the frequent cause of rather serious accidents. Force exerted on the handle causes it to break and the sharp edges of the porcelain may sever the tendons in the palm. Twelve such cases, for the most part deformities resulting from such an injury, were recently reported from the Mayo Clinic. The early recognition of the extent of the injury and early suture of the severed tendon are important. Porcelain handles were chosen for their appearance but are being replaced by chromium-plated brass handles, the chromium being much more lasting than nickel, which was formerly used.

Certain unnecessary hazards incident to baths can be eliminated by the construction and equipment of the modern bath room. Against those which cannot be eliminated the public should be warned.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

Illustrated Constitution

After two years of study, discussion and revision, the new constitution of the Minnesota State Medical Association which had its final approval at the May meeting of the House of Delegates in Saint Paul is now printed and ready for distribution.

The objective of the committee in charge of revision was, first: to enlarge, consolidate, reorganize and bring up to date the somewhat antiquated committee structure of the organization; second, to rearrange in a more logical and convenient order the detail of the constitution and by-laws. Very few changes were made in the actual provisions of the constitution.

Dr. C. B. Wright was chairman of the committee which devoted much time and hard work to the undertaking. Members were Dr. E. S. Boleyn, Dr. W. F. Braasch, Dr. W. A. Fansler, Dr. W. H. Hengstler, Dr. J. C. Hultkrans, Dr. E. A. Meyerding, Dr. F. J. Savage and Dr. C. L. Scofield.

The new committee structure is inclusive, logical and well planned to meet all demands that may be made upon the organization. It has the approval of the Bureau of Legal Medicine of the American Medical Association and has been admired by many other state organizations.

A real novelty in printed constitutions and a very handy aid to understanding the organization is provided in illustrative charts that show the exact structure and sub-structure of the two groups of committees, scientific and non-scientific.

Copies of the new constitution have already been sent to all officers, committee chairmen and other specially interested persons. Any member who wants a copy may write for it to state headquarters, 11 West Summit, St. Paul.

The Council Meets

A total registration of 4,256 at the 1937 Annual Meeting in Saint Paul was reported to the councilors by Secretary E. A. Meyerding. This figure does not include a considerable number of women and other guests who attended but failed to register. It represented the largest attendance ever recorded at a state meeting in Minnesota.

Several innovations marked the meeting. They were reported upon by Doctor Meyerding as follows:

New Precedent Established

"The 1937 meeting in Saint Paul will be memorable for many reasons. Notably it gave unprecedented program representation to the scientific, social and economic problems of medicine. No other state medical association has ever been able to gather together at one time and for such a purpose so many of the organizations and groups who are today allied in the delivery of medical care to the people.

Allied Exhibits

"Most of the organizations represented on the discussion programs also submitted exhibits. Our members who took advantage of the occasion to study these displays appreciated, for the first time, the extensive medical programs of these allied organizations and the importance of a good working coöperation between medicine and these groups.

\$1,000 Saved

"Incidentally, the participation of many organizations coming from many states made it possible to secure the Saint Paul Auditorium for the meeting without charge. This meant a saving of \$1,000 in the cost of the meeting and was an important factor, obviously, in the financial success of the meeting.

Congress A Success

"Approximately 1,000 persons registered for the separate organization luncheons and the joint afternoon and evening meetings of the Congress of Allied Professions. They represented the following:

Dentistry	Technicians
Nursing	Anesthetists
Social Service	Hospital and Medical
The Hospitals	Librarians
Pharmacy	Others
Dietitians	

Foundation Laid

"Speakers were carefully chosen to represent all points of view. The result is undoubtedly a better understanding between us all. Furthermore, a foundation has been laid for a closely knit coöperative organization which will be invaluable in case of need. Credit for the success of the Congress should go principally to Dr. George Earl, general chairman, to Dr. F. J. Savage, committee member, and Mr. R. R. Rosell, committee secretary.

Industrial Conference

"Industrial medicine is an exceedingly important phase of modern scientific medicine and it is intimately involved, also, with the social and economic future of the doctor. State medical societies have ignored this phase of practice to a considerable extent, leaving it to insurance companies and others to develop, even in its scientific aspects.

"Our 1937 meeting with its Northwest Industrial Medical Conference was the first of its sort in the United States to recognize the importance of industrial practice and, more especially, the importance of retaining leadership in post-graduate education in this department.

Great Northern Surgeons Attended

"It should be noted that in the large and brilliant assemblage of physicians, state officials, insurance representatives, who attended the sessions and the introductory dinner were all of the Great Northern Surgeons from the Northwest territory of the railroad. This section of the program was very largely the work of President A. W. Adson and credit for its success should go to him.

Public Health Meeting

"For the public health meeting, another innovation in our annual sessions, the huge Auditorium theater was filled to overflowing in spite of the fact that unavoidable last minute emergencies made it impossible for two popular speakers to be present. The success of this occasion was due in no small measure to the radio publicity given it under the direction and with the personal aid of Dr. R. M. Burns of Saint Paul.

Exhibits

"Since the meeting of 1932 special emphasis has been placed upon scientific exhibits as a center of interest, as a source of information and as an important incentive to individual members to develop and organize their own scientific studies. In addition to the Mayo Clinic, several individual researchers, among them, Dr. Adolph Hanson, Dr. L. F. Hawkinson and Dr. M. H. Nathanson, have added nationally recognized contributions to scientific knowledge. These contributions have had early demonstrations at these meetings.

"The secretary is of the opinion that many members receive more benefit from exhibits than from the scientific papers read and discussed in the formal program sessions. They are clearly an incentive to research.

Local Arrangements

"Ample exhibit space, excellent arrangements for telephone and registration, for showing films and slides and for entertainment combined to make the meeting unusually smooth and convenient for everybody. Credit for much of this efficiency should go to the local arrangements committee and particularly to Dr. W. R. McCarthy, chairman, Dr. B. E. O'Reilly, Dr. W. R. Shannon.

Registration Costs

"It is perhaps difficult for anyone who has never assumed the responsibility for staging a large medical meeting to appreciate the expense involved. These expenses grow yearly as the scientific exhibitors, especially, become more enthusiastic, more experienced and more exacting in their demands for service and equipment. It should be repeated that this phase of our post-

graduate education is perhaps the most valuable and the most significant in the long run of any that we are able to undertake as a society; but it costs money—money which it is impossible to budget out of the dues of members.

"It is, therefore, of particular interest to note that our large meetings of the last five years have actually cost the members less in the aggregate than the small meetings—almost totally lacking in scientific exhibits—of a few years ago.

"In the last five years a total of \$12,034.68 has been turned from the technical fund (accumulated by sale of exhibit space to technical exhibitors) into the general fund of the Association. The increasing patronage of these exhibitors witnesses the growing popularity and importance of our meeting.

Conclusion

"In conclusion may I be allowed to impress once more upon our members that we are living in new times and that these new times make unexampled demands upon us as the organized body of physicians. One of our best means of arming and educating ourselves as a body to meet these problems is an Annual Meeting that serves as a focal point for discussion, interest and organization for all who are legitimately concerned, for any reason whatever, in the care of the sick."

A resolution expressing appreciation for the meeting and for the work of Secretary Meyerding and all others concerned in planning and conducting it was passed by the Council.

Councilor District Meetings

Preliminary plans were approved for a series of councilor district meetings to be held throughout the state this fall. Speakers will be state relief and welfare officials, and local relief workers, also state officials in charge of the administration of Social Security programs affecting medicine. The object is to foster a complete understanding on the part of all concerned of all regulations regarding welfare, medical relief and the Social Security program as they affect each district.

To Study Hospital Service

In response to a request made in person by representatives of the Minnesota Hospital Service Association, a committee was appointed by the Council consisting of Dr. W. W. Will, chair-

man, Dr. A. F. Branton, Dr. F. J. Savage, Dr. L. L. Sogge, Dr. T. H. Sweetser, for the study of hospital service. This committee will confer unofficially with executives of the association when extension of the association's service to new territory is contemplated.

Hospital Service Association representatives who appeared before the Council reported a growing membership and extensions in privileges to Twin City members, with hospitals in both cities participating and no member-patients admitted except at the request of their own physicians.

For Crippled Children

The Division of Services for Crippled Children of the State Board of Control plans to continue its excellent program of medical care for indigent crippled children another year, Dr. H. E. Hilleboe, director, told the Council. This program provides for professional care by qualified orthopedists, members of the Orthopedic Club, at fees set by club members themselves and in private hospitals, if necessary, at fees set by the hospital association. It provides, also, for training of physio-therapists who will be able to visit patients in their homes and thus shorten hospital stays.

A project for the study of subsequent histories of tuberculous patients discharged from sanatoria which is to be financed by WPA funds was explained to the Council. A motion of thanks to Doctor Hilleboe for his interest and care in keeping the Council informed on matters of medical interest and a motion of appreciation, also, to the State Board of Control on the excellence of its program in general and on its coöperation with the medical profession, were passed.

"Demonstrations"

Another guest, Dr. E. C. Hartley, explained to the Council differences in interpretation affecting requirements for securing certain funds from the federal government under the Social Security Act that have arisen between the State Board of Health and the Children's Bureau in Washington. The difference is in the interpretation of the word "demonstrations" in care of mothers and babies. The Children's Bureau appears to be of the opinion that demonstrations require actual obstetrical care to be given by representatives of the board of health in "cer-

in needy areas or areas of financial distress." The State Board of Health, on the other hand, has never provided such care and holds it to be outside the province of a board of health. Funds that might otherwise be available for some needed public health work in the state may, therefore, be held up indefinitely according to Doctor Hartley. It is quite likely that Dr. A. J. Hasley, executive officer, will recommend foregoing the funds entirely if they entail setting up such a precedent in Minnesota.

New Film

A film called "The Birth of a Baby" has been approved, according to Doctor Hartley, by the American Committee on Maternal and Child Welfare and also by Chairman R. D. Mussey of the Minnesota State Medical Association's Committee on Maternal and Child Welfare for showing to lay audiences.

The film was produced by a commercial organization but contains no advertising whatever for the commercial house in question. The requirement for showing in any state is a preliminary showing before officers of the state medical society or some qualified group designated by the society. The Council has accordingly requested a showing of the film before the Minnesota Society of Obstetrics and Gynecology at its fall meeting. If the society approves the film, said to be an excellent one, showing will be made in the public theaters according to bookings that will be made direct by the producing company.

Control of Diabetes

Dr. R. M. Wilder, chairman of the Committee on Diabetes, presented a plan formulated by his committee for intensive public education on the proper treatment of diabetes. The Council approved the plan which includes coöperation, with a view to obtaining funds and assistance for the work, with other organizations or philanthropically minded individuals. The problems involved in diabetes are growing more serious according to Doctor Wilder and education is regarded as an important means of halting the rising death rate from the disease.

Law and Medicine

Ethical and professional problems of law and of medicine have much in common. The two

professions of medicine and law are jointly threatened by some aspects of new social philosophies. The request from the Minnesota State Bar Association, presented to the Council by President Adson, for a joint committee of the Bar Association and the Minnesota State Medical Association was cordially approved. The committee will serve as a discussion group for consideration of matters of mutual interest. The Medical Advisory Committee of the state association will represent the physicians for these discussions.

Licensing Physio-Therapists

The necessity for some formal recognition and licensing of physio-therapists was also presented to the Council by President Adson.

Requirements and conditions for the practice of physio-therapy are nowhere standardized. The present chaotic condition allows for dangerous, uncontrolled practice and for out-and-out quackery. This problem confronts the State Board of Medical Examiners with an especial urgency and, at the request of Doctor Adson, a special committee to work out some method of recognition of physio-therapists was authorized. This committee is to consist of three members and it will be appointed jointly by President Adson and President-elect J. M. Hayes.

Membership

A paid membership of 2,292 was reported on the date of the meeting. That represented an increase of 163 members over a year ago.

Leave Granted

The request of Secretary E. A. Meyerding for a year's leave of absence without pay was granted by the Council. The action was accompanied by an official expression of confidence and loyalty on the part of the councilors. Doctor Meyerding's leave will extend from September 1, 1937, to September 1, 1938.

By direction of the Council, Mr. R. R. Rosell, field secretary, will assume the duties of executive secretary of the organization.

Special Session Adjourns

The special session of the Minnesota Legislature that commenced on May 24, 1937, adjourned on July 23, 1937. No so-called healing bills were passed, but the Committee on Public Policy

wishes to call your attention to two or three provisions in the Relief Law that was enacted, and to a provision in the Income Tax Law.

In Chapter 89 the Legislature appropriated the sum of \$11,100,000.00 for relief purposes, of which amount the sum of \$5,850,000.00 is available for direct relief for the fiscal year of July 1, 1937, to June 30, 1938. Among other things Section 4 of the law provides:

"All persons employed on work relief or reemployment projects shall be employees within the meaning of the provisions of the Workmen's Compensation Act, provided that the Council may, in lieu of purchasing Workmen's Compensation insurance, provide for the direct payment of compensation claims out of funds available for such purpose, and if such funds are not available therefor then out of any moneys appropriated by this act."

Section 11 also provides:

"All counties shall permit free choice of vendor to relief clients for relief orders, provided that the vendors thus chosen conform to the regulations of the Executive Council and of the responsible relief agency."

A slight change was made by the Legislature in Chapter 49, in the wording of the provision allowing a deduction for money paid on account of the expense of sickness. That Section now reads as follows:

"Sec. 9. That Laws 1933, Chapter 405, Section 13, subsection (k), be and the same is hereby amended to read as follows:

"(k) Payments for expenses for hospital, nursing, medical, surgical, dental and other healing services and for drugs and medical supplies incurred by the taxpayer on account of sickness of or personal injury to himself or his dependents."

Respectfully submitted,

Committee on Public Policy

By L. L. SOGGE, M.D., *Chairman*

Medical Relief: New Chapter

With the passage of Section 11 of the Relief Law quoted above, physicians and medical societies are now equipped to begin a new chapter in their relations with officials in charge of relief. Credit for securing this important provision in the law goes chiefly to Dr. C. I. Oliver, State Senator, of Graceville.

For the first time the doctor who is taking care of the indigent sick in his community is armed in the law against the threat of a county physician.

Free choice of physician—provided the physician qualifies under the regulations and lives

up to the regulations—is guaranteed in the law to relief clients in all the counties that accept state aid.

The importance to physicians of this provision can hardly be overstated. County physicians can no longer be hired to take care of an indigent regardless of the feeling of patient or physician in the matter.

In all but the three big cities and a few counties that do not accept state aid, the physician is backed by the law in his belief that indigent patients as well as others are entitled to the own choice of physician.

Physicians who are now engaged in making arrangements with their county welfare board for a fair recompense for care of the relief clients should be aware of this new clause in the law.

New regulations on the delivery of relief in general are now being formulated at the relief headquarters in Saint Paul. These regulations will be in the hands of Contact Committees of Three and responsible officers as soon as they are ready for distribution.

True Friendship

Monthly Editorial Prepared by the Medical
Advisory Committee

A vacation time in this land of Ten Thousand Lakes gives a man much time for philosophizing. It enables the older man, perhaps, to retrace the steps of youth—the old swimming hole, the place where the lilies hid the elusive bass from his bamboo pole. To the younger one comes an occasion to explore new fields—a canoe trip in the wilderness of the unknown North where the pines and the landlocked salmon all await him. He has time in the stillness along the trout stream for thought. They both make new resolutions which they vow to carry out when they reach home. They will seek to know their neighbors better. They will endeavor to find out the meaning of True Friendship. What is True Friendship? What are its attributes?

Your Medical Advisory Committee believes that True Friendship is like happiness—we have most of it when we give it away. It can never be bought and sold as an article of merchandise and is always better than any kind of charity. True Friendship requires a certain aging pro-

ess to produce the best results, and is something quite different from an interesting acquaintance. If put on a cash basis, it dies. It is something that cannot be hurried but is proven by time.

With these thoughts in mind, let each one better serve our association before the next vacation time by resolving to find one more true friend among the men of our own profession; by pledging to attend medical meetings more regularly, that we may by united endeavor raise organized medical practice to an even higher plane than it is at present in Minnesota.

"She replied promptly, in part: 'The article in *Time* is insidious. Perhaps I can illustrate briefly the essential falsity of it: It publishes with the article a picture of Mrs. Roosevelt, Mrs. Bok and me, that was taken four years ago, upon a social occasion, and the picture is made to substantiate the impression the reader is intended to get that Mrs. Roosevelt, Mrs. Bok and I are now conspiring to bring about socialized medicine. Neither of these ladies had anything to do with the current report, either directly or indirectly. I do not know in detail the views of either on the question of public health and the organization of medical care.

"I neither devised nor promoted the program which Doctor Kopetzky put up to the New York State Medical Society and which that organization sent through to the House of Delegates of the A.M.A.'"

"Essentially False"—Miss Lape

The following excerpt from the July *Southern Medicine and Surgery* appears on *The President's Page* of Dr. Wingate M. Johnson.

It is of especial interest because it quotes from an illuminating letter by Esther Everett Lape, compiler for the American Foundation for Studies in Government of the report on American Medicine. Miss Lape denies with tart emphasis *Time's* implication that she played any part in the New York proposal for federalization of medical services to the needy that was rejected at the Atlantic City session of the American Medical Association.

"Upon my return from Atlantic City I found a letter from Dr. McBrayer in which he said, 'I am wondering if New York has been tipped off and if the thing they presented is what the President wants.' I did not take this seriously until I saw *Time* for June 21, and read in it that on April 8, President Roosevelt had been discussing a plan to federalize the medical profession; and that among those present in the first conference was Doctor Kopetzky of New York. Then my admiration of Dr. McBrayer's perspicacity rose to new heights. Another member of the group was Miss Esther Everett Lape, director of the American Foundation study. According to *Time*, the resolutions presented to the A.M.A. by Doctor Kopetzky were based upon Miss Lape's ideas.

"In justice to Miss Lape, let me say that I wrote her immediately after reading the story in *Time*, telling her that my first reaction was one of indignation over the apparent betrayal of the doctors of America; but that before condemning her I was asking for her own statement. I added that I had been greatly interested in the report and did not want to believe the impression left by *Time* that it was a scheme to further the federalization of the medical profession.

Watch for Addict

From a Duluth member:

"Will you report the following information to the proper authority? I think it should be made available to the rest of the profession.

"On July 17 a man about 40 years of age, giving the name of W. B. Cline, came to my office stating that he was vacationing up here while convalescing from a lobectomy supposed to have been done by Dr. Gardner of Saint Paul. He stated that he was living with a sister at Munger, Minn., at present, who he said is a nurse. He wanted dressings and medicines including morphine which according to his story I thought was justified.

"On examination he had a left bronchial fistula, a cavity the size of a fist, in his left chest wall. He stated that he had been spitting up blood and wanted the morphine for that.

"He paid me by check and the check was returned 'no account' and I have since found out that he went to Dr. Cyril Smith of Duluth, with the same story and with the same outcome. He also passed a bad check on the drug store.

"This fellow is undoubtedly a morphine addict as well as a bad check artist and I thought it would be well to tip off other physicians. He is easily recognized by his bronchial fistula. He is a man of about 40 years, around 5 feet 6 inches, pointed features, well dressed and business-like."

From another source we hear that this man used the name "W. B. Cole" in the Twin Cities and that the Duluth Police Department holds a warrant for his arrest. If he is apprehended, the Duluth Police Department should be notified immediately.

Minnesota State Board of Medical Examiners

"Divine Healer" Fined \$200 for Prescribing Medicine

Re: State of Minnesota vs. A. C. Martin

On July 27, 1937, A. C. Martin, 54 years of age entered a plea of guilty to an information charging him with practicing healing without a basic science certificate. Martin was sentenced by the Hon. Joseph J. Moriarty, Judge of the District Court at Shakopee to pay a fine of \$200 and costs of \$9.85 or serve one year in the McLeod county jail. Martin stated he would pay the fine and costs.

For some time Martin had been making weekly trips to Brownton where he had a room at the hotel for the reception of patients. He is listed in the Minneapolis city directory as a "healer" residing at 1916 Hennepin Avenue. The evidence showed, however, that Martin said nothing to the patient about being a "divine healer" until after he was arrested. He prescribed alum, boric acid and iodized salt dissolved in water and applied externally to the neck and throat for goiter and also suggested and furnished "gland tablets" to be taken internally. He also applied some massage and while doing this talked to the patient about the weather, rock gardens and many other things disassociated with divine healing.

Upon being questioned by Judge Moriarty the defendant stated he had never studied medicine but that he had been a farmer for many years and had also worked as a traveling salesman. He claimed his "divine healing" as a gift from the Lord at the age of 14. He admitted, however, that when he was sick he consulted and was treated by a physician. He learned about the gland tablets in this manner and purchased them at a drug store in Minneapolis. He stated he was born in Illinois but had lived for many years in Martin county, Minnesota, and for two years at Mankato. He operated at Brownton on Tuesdays; Pine City on Wednesdays; Arlington on Fridays and at his home in Minneapolis on the other days of the week. Martin was told by Judge Moriarty to obey the healing laws of this state or he would spend some time in jail.

The State Board of Medical Examiners wishes to acknowledge the first class cooperation received from Mr. Joseph P. O'Hara, county attorney of McLeod county and Sheriff Alfred Beihoffer. These officials acted promptly when the facts were called to their attention and the result obtained speaks for itself.

Germania Herb Tea

The Bureau of Investigation reports that the Federal Trade Commission has ordered the Germania Tea Company, Minneapolis, and the Consolidated Drug Trade Products, Inc., Chicago, to stop representing that "Germania Herb Tea" performs any functions in a reducing program other than those of a laxative or purgative, and that "Germania Orange Pekoe Tea" performs any function or has any value in treating obesity, or in a reducing program other than in the caffeine supplied through its consumption. According to a report of the Federal Trade Commission dated June 18, 1937, the principal ingredients of Germania Herb Tea are senna, which has laxative and purgative qualities, and juniper, a diuretic, and the principal ingredient of Germania Orange Pekoe Tea is caffeine. (J. A. M. A., July 31, 1937, p. 375.)

In Memoriam

Carl M. Anderson
1881-1937

DR. CARL M. ANDERSON was born in Scandinavia, Waupaca County, Wisconsin, November 1881. He received his secondary education at the Scandinavia Academy. He attended Marquette University in Milwaukee from 1907 to 1911 and received the degree of M.D. He then practiced in Wild Ros Wisconsin, from 1911 to 1921. During the war, he was commissioned first lieutenant in the Medical Reserve Corps. He entered The Mayo Foundation January 1921, as a special student in otolaryngology. He became first assistant in the Section on Otolaryngology and Rhinology. The Mayo Clinic in January, 1924, an associate in 1925. He was appointed instructor in otolaryngology in 1925 and assistant professor of otolaryngology in 1929 in The Mayo Foundation. He has written articles on otolaryngological subjects in the last twelve years.

The position Dr. Anderson had attained in his chosen field of medicine was well deserved. He was first of all a fine gentleman and family man. He possessed a very pleasing professional poise, was a keen observer, a very skillful surgeon, a loyal associate and had an unusually good sense of organization and responsibility. He was endowed with especially good common sense and was very tolerant of any shortcomings in others. One always knew he would do or say what he thought was right. His confrères and nonprofessional associates will greatly miss his genial personality.

Dr. Anderson was a member of the American Medical Association, the Alumni Association of The Mayo Foundation, the Southern Minnesota Medical Association, the American Academy of Ophthalmology and Otolaryngology, the American Laryngological, Rhinological and Otological Society, the Minnesota Academy of Medicine and Sigma Xi.

Dr. Anderson died at his home in Rochester, August 10, 1937, of coronary thrombosis.

Jacob Fowler Avery
1873-1937

DR. JACOB FOWLER AVERY was born at Poughkeepsie, New York, January 19, 1873. He graduated from Central High School in Minneapolis in the class of 1892, and received his medical diploma from the medical school of the University of Minnesota in 1899. After serving his internship at the Minneapolis General Hospital, Dr. Avery practiced at Virginia from 1899 to 1901, at Aitkin from 1901 until 1906, when he moved to Minneapolis. He retired from active practice in Minneapolis in 1932 on account of coronary disease, and moved to La Jolla, California, where he died June 25, 1937.

Dr. Avery was married June 4, 1902, to May L. Esmond, who with one son, Esmond, of Detroit, Michigan, survive.

During the World War, Dr. Avery was commissioned captain in the Medical Corps and entered active service August 27, 1917 at Fort Riley. He served as surgeon at Camp Lewis, Washington, for the 44th Infantry, and later for the 39th Field Artillery. He was ordered to Honolulu March 15, 1919, and discharged from Camp Dodge October 14, 1919, to the rank of Colonel in the Medical Reserve.

Dr. Avery had for many years been a member of the Hennepin County Medical Society and upon retirement became an honorary member. He was also a member of the Minnesota State Medical and American Medical Associations. At one time he was a member of the Minnesota Society of Internal Medicine, and he was a fellow of the American College of Physicians. While practicing in Minneapolis he was a member of the staffs of Northwestern and Abbott hospitals.

Frederick Hyde Bethune

DR. FREDERICK H. BETHUNE died at his home in Emo, Ontario, July 28, 1937.

Dr. Bethune was the first doctor to practice in the Rainy River district west of Fort Francis, when he began practice at Emo in 1899.

During the World War, Dr. Bethune served in France with the Canadian Army Medical Corps as captain with the 141st Battalion.

Dr. Bethune is survived by his widow, two sons, Alex and Robert, and two daughters, Kathleen and Viola.

In addition to practicing medicine, Dr. Bethune was greatly interested in mining, and in recent years operated a fox farm at Emo.

Frederick Chetlain Drenning 1867-1937

DR. F. C. DRENNING, a resident for the past forty-five years of Duluth, died at his home July 25, 1937, at the age of sixty-nine, from rupture of an iliac aneurysm.

Born November 19, 1867, at Galena, Illinois, the son of Thomas G. and Adele Chetlain Drenning, Dr. Drenning attended school at Galena and received his medical degree from Northwestern Medical School in 1892. The same year he was licensed in Minnesota, when he located in Duluth. Besides being in general practice, he was Medical Director of the Modern Samaritans from 1927 to 1931.

Dr. Drenning was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations, and a member of the staffs of St. Luke's and St. Mary's Hospitals.

In 1912 Dr. Drenning married Eva Thayer Niles. One daughter, Verna Thayer Drenning, now Mrs. J. E. Brown of Duluth, resulted from the union. Following the death of Mrs. Drenning, he married in 1930 Ethel

H. Nelson, who, as well as two sisters, Cecile and Julia Drenning, both of Galena, Illinois, survive him.

If the name of Dr. Drenning did not scintillate afar from the great cerebrum of Minnesota medicine and if his tongue was usually quiet at local meetings, his steady life at least, contributed much to the vertebral structure of the profession. To more than this, few of us may aspire. If he had faults, they remained undiscovered by one who knew him well for many years.

J. M. R.

Martin Josef Fiala 1903-1937

DR. FIALA, born in Copenhagen, Denmark, a graduate in 1929 of Western Reserve University in Cleveland, and associated in Dermatology and Genito-Urinary Diseases with the Duluth Clinic in Duluth since 1930, died August 10, 1937, at Rochester, Minnesota, after an operation for a tumor at the base of the brain and overlying the fourth ventricle.

Dr. Fiala was representative of that sturdy group of doctors who came in great numbers from the Scandinavian countries to this Northwest. Many more came in the decades preceding the beginning of this century than came later; and many were trained in medicine in their home country. They have left an indelible impress upon our medical traditions and they helped in a very great measure to advance the citizenship and political ideals of their countrymen in America.

Dr. Fiala, representing a much younger group, came first to Baltimore following an international Scout meeting in Copenhagen. He was an active Scout at the time and mentioned to certain of the representatives from the United States his ultimate great desire to come to this country. Some of them invited him to come to Baltimore. The invitation accepted, he appeared within two years' full of energy and explained to these Scout friends that it was his intention to remain and study medicine. It happened that he had been efficiently trained in anatomy in his home country. His Baltimore friends found an opportunity for him to work with Professor T. Wingate Todd at Western Reserve in Cleveland. Depending almost entirely upon his own resources, he carried through with all the difficulties of language and a heavy curriculum in one of our best medical schools.

He came to Duluth and served an internship at St. Luke's Hospital. In 1929, he married Grace Fairchild, daughter of the late Dennison Fairchild and Mrs. Fairchild of Duluth.

His death of an affliction that defied the greatest of medical skill for its alleviation leaves in his immediate family his wife and three young sons, Martin Josef, Dennison and John. Both of his parents are still living in Copenhagen as well as two brothers. He made friends everywhere. His passing is mourned by everyone, but particularly by the numerous Danes in northern Minnesota who found in him a sturdy transplant from the mother land.

Earl Jamieson
1877-1937

DR. EARL JAMIESON, practicing physician and community leader in Walnut Grove for nearly thirty years, died July 17, at the age of sixty, from meningitis.

Doctor Jamieson was born in Moline, Illinois, May, 1877. He received his medical education at the Hahnemann Medical College of Chicago and at the University of Illinois Medical School. He served his internship at Cook County Hospital in Chicago and for some time thereafter served as physician for the Hull House Settlement in Chicago. In August, 1907, he moved to Walnut Grove, Minnesota, and had remained there in general practice ever since with the exception of seven months spent as captain in the Medical Corps of the United States Army at Travis, Texas.

During his entire residence in Walnut Grove Doctor Jamieson served as a member of the school board. For six years he was chairman of the Board and the recently completed school building was largely the result of his efforts.

In 1915, he was married to Miss Mary Blanche Walker of Walnut Grove, who died a year later. In April, 1919, he was married a second time to Miss Hazel Jones of Mankato, who, together with their daughter, Doris, survives him. He is survived also by a brother, Guy Jamieson of Moline, Illinois, and by four sisters, Blanche Jamieson and Louise Alsterlund of Moline, Grace Jamieson of Ann Arbor, Michigan and Mrs. Lewis Weldt of East Falls Church, Virginia.

The illness which caused his death followed a minor operation which he underwent a few days earlier for the removal of nasal polyps.

Doctor Jamieson was a member of the American Medical Association, the Minnesota State Medical Association and the Redwood-Brown County Medical Society.

Amos Leuty
1868-1937

DR. AMOS LEUTY, a prominent and esteemed resident of Morris, Minnesota, where he had lived for thirty-four years, died very suddenly on June 24, 1937, at the age of sixty-eight.

Dr. Leuty was born in a log cabin in Marion County, Iowa, December 5, 1868, the youngest of a family of thirteen children. His father died when he was but two years old and he was reared for the most part in the homes of his older brothers until he was eighteen. At the age of nineteen he bought eighty acres of land, farmed for five years and made and saved money each year.

At the age of twenty-four he started to school and took a business course at Highland Park College and then obtained his medical degree from Drake University. When he was finally through school he owed less than \$250 and owned 160 acres of land which was worth about \$8,000. Starting with nothing, in ten years' time he had obtained a medical education and had accumulated about \$8,000.

When a youth, Dr. Leuty made a trip to South Dakota in a covered wagon with one of his brothers and saw surveyors deserting their work to dig into Indian mounds. He became intensely interested and upon trying it himself he opened what proved to be the burial place of a chieftain. Collecting Indian relics became from that time a lifelong hobby and he had a wonderful collection.

Dr. Leuty took a deep interest in many civic and fraternal activities in Morris. He served for twenty-one years on the school board and was for several years a member of the city commission. He was a member of the Christian Church. He was also a member and Past Worshipful Master of the Golden Sheaf Lodge No. 133, A. F. and A. M., and a member and Past Worthy Patron of the Corinthian Chapter, No. 77, O. E. S.

Dr. Leuty was married to Irma Carter at De Soto, Iowa, October 14, 1896. Mrs. Leuty died June 3, 1933. They are survived by one son, Dr. Robert Leuty of Morris and two daughters, Mrs. C. B. Thomas of Pipestone and Mrs. Edward G. Hirt of St. Cloud.

Olaf I. Refsdal
1877-1937

DR. OLAF I. REFSDAL of Hayfield, Minnesota, passed away on January 14, 1937, at Austin, Minnesota. Some months ago, ill health forced his retirement from practice and he went to Austin to reside with his daughter, Mrs. Melvin Lagervall.

Born in Sogn, Norway, December 24, 1877, Dr. Refsdal came to this country as a youth and lived with an uncle at Decorah, Iowa, while attending high school. He later attended Breckenridge College, Hamline University, the summer schools of the University, and obtained his medical degree from Northwestern in 1910.

In 1908 Dr. Refsdal was married to Sara Christlock of Wanamingo, Minnesota, and following his graduation he began practice at Marine Mills, Minnesota. In 1913 he moved to Hayfield where he has continuously practiced.

Dr. Refsdal is survived by his widow and four daughters, Mrs. Melvin Lagervall of Austin, Mrs. George Rodger of Chicago, Mrs. John Woodward of Austin, and Ellen who attends school in Austin.

Dr. Refsdal was held in esteem by his many friends and patients in the locality where he had practiced for twenty-three years.

E. D. Stoddard

DR. E. D. STODDARD, formerly of Stewartville, Minnesota, died at his home in Los Angeles, California, May 28, 1937.

Dr. Stoddard began practice in High Forest, Minnesota, in 1875 and moved to Stewartville in 1890. He was in partnership with Dr. Frank Burns and established the drug firm of Stoddard and Wood.

Dr. Stoddard was married at High Forest about 1878, but had no children. He was eighty-seven years old at the time of his death, and had not been actively engaged in practice since moving to Los Angeles.

OF GENERAL INTEREST

Dr. B. Scodel of Saint Paul, has located in Maynard for the practice of medicine.

* * *

Dr. John M. Adams has become associated as pediatrician with the Nicollet Clinic.

* * *

Dr. R. G. Swenson of Harris, has purchased the practice of Dr. G. E. Schoofs of North Branch.

* * *

Dr. Donovan Penheiter is now associated with Dr. Leroy J. Larson of Bagley, in the practice of medicine.

* * *

Dr. Sam Levi has become associated with Dr. H. A. Fasbender of Hastings, in the practice of medicine.

* * *

Dr. O. F. Mellby of Thief River Falls, has recently completed his term of office as president of the Rotary Club.

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Dr. W. C. Ferguson of Fargo, North Dakota, has located at Walnut Grove, Minnesota, for the practice of medicine.

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Dr. W. G. Paradis, formerly superintendent and medical director of Sunnyrest Sanatorium, is planning to enter private practice in Canton, Ohio.

* * *

Dr. S. C. Jump, formerly of Madison Lake, has located at Kasson, taking over the practice of Dr. F. D. Smith who recently moved to Rochester.

* * *

Dr. W. G. Rogne, formerly of McClusky, North Dakota, has become associated with Drs. G. M. Helland and J. W. Helland of Caledonia, in the practice of medicine.

* * *

Dr. W. H. Rumpf, of St. Cloud, has announced his withdrawal from the St. Cloud Clinic and the establishment of private offices for the practice of medicine and surgery.

* * *

Dr. Arthur A. H. Koepsell has begun practice at 714 Lowry Medical Arts Building, Saint Paul, in association with Dr. James J. Swendson. His practice is limited to obstetrics and gynecology.

* * *

Dr. Sam Leonard will leave the latter part of September for Cook County Graduate School of Medicine, where he will take postgraduate work in surgery. He will return in six months.

* * *

Dr. Earl Jamieson has returned to Brainerd after spending several months in Chicago, where he did eye, ear, nose and throat surgery at the Cook County Hospital and at the University of Illinois.

Dr. Joseph J. Stratte of Grand Forks, North Dakota, will be in Hallock, Minnesota, on Saturdays and Sundays for the convenience of his patients. Dr. Stratte formerly was located at Hallock.

* * *

Dr. A. V. Denman of Mankato, is planning to hunt big game in Alaska, following a trip which he and Mrs. Denman, Dr. and Mrs. J. S. Holbrook and Dr. J. A. Hielscher, are taking to Fairbanks, Alaska.

* * *

Dr. Ralph T. Knight, Minneapolis, has completed a period of fifteen months devoted to the study of regional and general anesthesia at the Mayo Clinic and has resumed practice at 1543 Medical Arts Building.

* * *

Dr. Charles Vandersluis of Bemidji, has moved into his new offices, known as the Dr. Charles Vandersluis Medical Building. In the new building are contained the office, consultation rooms, treatment rooms and laboratory, all on the street level.

* * *

Dr. C. C. Erickson, formerly of Strong Memorial Hospital in Rochester, was recently married to Miss Bernice Katherine Peck, daughter of Dr. and Mrs. L. D. Peck of Hastings. Dr. Erickson is now affiliated with Duke University, at Durham, North Carolina.

* * *

Dr. Kenneth L. Nelson of Minneapolis, has become associated with the staff of the Willmar Hospital Clinic in the practice of medicine and surgery. Dr. Nelson graduated from the University of Minnesota medical school, and served his internship at Miller Hospital in Saint Paul.

* * *

Dr. E. W. Wahlberg, of Isle, has moved to Morgan, where he will be associated in practice with Dr. William E. Johnson. Dr. Donald M. Brink, of Minneapolis, a graduate of the University of Minnesota medical school, has made arrangements to take over Dr. Wahlberg's practice at Isle.

* * *

Dr. Edward C. Rosenow, Sr., Rochester, has received the James E. Stacey award of the University of Cincinnati, consisting of a gold medal and \$100 for recent establishment of the relation of infections in the tonsils to certain spasmodic diseases such as chronic hiccup and torticollis.

* * *

Announcement has been received of the marriage of Dr. George Sather, son of Dr. and Mrs. Allen Sather of Fosston, to Miss Esther Putnam Lewis of Minot, North Dakota. Dr. and Mrs. Sather will make their home in Fosston, where Dr. Sather will be associated in practice with his father.

Dr. Russell Aanes, son of Dr. A. N. Aanes of Red Wing, has taken over the medical offices of Drs. Nilander and Addington at Ellsworth, Wisconsin. He will also have charge of the Ellsworth Hospital. Dr. Aanes graduated from the University of Minnesota medical school a year ago and served his internship at General Hospital, in Minneapolis.

* * *

Dr. Karl E. Sandt, recently House Surgeon in Ophthalmology at the Manhattan Eye, Ear, Nose and Throat Hospital, New York, and Dr. Charles E. Stanford, recently Teaching Fellow in Ophthalmology at the University of Minnesota Medical School, have become associates with Dr. John F. Curtin and Dr. Lawrence R. Boies at 1631 Medical Arts Building, Minneapolis.

* * *

The fifth season of broadcasting by the American Medical Association will begin this fall over the National Broadcasting Company hookup. This season the program will be addressed particularly to teachers and junior and senior high schools, and will come during school hours so it may be utilized directly in the thousands of schools which have radios reaching the class rooms.

* * *

Dr. W. E. Anderson of Saint Paul, has become associated with Dr. O. F. Melby of Thief River Falls, in the practice of general medicine. Dr. Anderson graduated from the University of Minnesota medical school in 1933 and served his internship at St. Luke's Hospital in Kansas City, Missouri. He also spent a year at the Kansas City General Hospital, and the past year at the Midway Hospital in Saint Paul.

* * *

At the New York World's Fair to be held in 1939 there will be a medical and health building to cost \$425,000, with a floor space of 81,871 square feet, to be devoted to exhibits especially chosen for the enlightenment of the average man. Sections will be devoted to anatomy and physiology, diseases and public health. Dr. Victor Heiser has been appointed chairman of the General Advisory Committee composed of 101 national, state and local authorities on medicine and public health which will plan the exhibits.

* * *

A Duluth naval reserve hospital unit for emergency in the event of war, riot or disaster, has been organized by Dr. Gage Clement, upon the request of Commander A. O. Robideau of Duluth.

Physicians who have been appointed heads of departments include Dr. P. S. Rudie, surgery; Dr. D. W. Wheeler, medicine; Dr. M. H. Tibbetts, orthopedics; Dr. Walter E. Hatch, genito-urinary surgery; Dr. M. F. Fellows, eye, ear, nose and throat; Dr. L. R. Gowan, nervous and mental diseases; Dr. Arthur H. Wells, pathology; Dr. George W. Lawson, dentistry, and Dr. Gage Clement, radiology.

All of the physicians are commissioned officers in the naval reserve corps.

HOSPITAL NOTES

Dr. W. H. Valentine of Tracy, is planning to build a new \$75,000 modern fire-proof 30-bed hospital.

* * *

The new detention unit of the State Hospital at St. Peter has now been completed, and approximately 60 patients have been moved into the new unit.

* * *

St. Barnabas Hospital, Minneapolis, announces the installation of 400,000-volt Kelley-Koett X-Ray Therapy equipment for the treatment of malignant tumors and other conditions for which this type of therapy is advisable.

Unique features of this installation are as follows:

There is complete protection against electrical shock.

The patient is protected by the x-ray proof construction of the treatment unit.

The x-ray tube is immersed in oil.

The transformer and x-ray tube are constructed in one unit.

The patient is in constant communication with the operator by two-way radio phone.

Treatments are given in large air-conditioned rooms which assures greater comfort for the patients.

All treatments are given under supervision of Russell W. Morse, M.D., and Ames W. Naslund, M.D.

TREATMENT OF STREPTOCOCCIC INFECTIONS WITH SULFANILAMIDE

Sulfanilamide is the nonproprietary term adopted by the Council on Pharmacy and Chemistry for paraminobenzenesulfonamide. A report has not been issued yet by the Council on the acceptability of the preparation. Long and Bliss have supplemented their preliminary report on the use of sulfanilamide and its dye derivative, the disodium salt of 4'-sulfamidophenyl-2-azo-7-acetylamino-1-hydroxynaphthalene-3, 6-disulfonic acid (Prontosil) in the treatment of streptococcic infections by more extended publication. They were able to confirm in part the reports of European investigators regarding the efficacy of sulfanilamide and its chemical derivatives in the treatment of beta-hemolytic streptococcic infections in mice. These authors also report the results of treatment of seventy persons ill with infections due to beta-hemolytic streptococci. It seems logical to believe, they state, that the prompt recognition of the nature of hemolytic streptococcic infection plus the adequate administration of the specific chemotherapeutic agents will greatly lessen mortality and duration of illness. (J.A.M.A., March 20, 1937, p. 976.)

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR SEPTEMBER

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 9:45 o'clock every Saturday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month will be as follows:

- September 4—Diphtheria and Smallpox
- September 11—Duodenal Ulcer
- September 18—Insomnia
- September 25—Cancer of the Mouth

AMERICAN HOSPITAL ASSOCIATION

The thirty-ninth annual convention of the American Hospital Association will meet at Atlantic City, September 13 to 17, 1937.

A comprehensive program will include such subjects as nursing, dietetics, social service, administration, trustees, group hospitalization, et cetera, and there will be displayed some 200 technical exhibits.

Administrative and professional personnel of all hospitals are invited to attend.

ASSOCIATION OF MILITARY SURGEONS

The forty-fifth annual convention of the Association of Military Surgeons of the United States will be held at the Ambassador Hotel, Los Angeles, October 14, 15 and 16, 1937.

The opening session October 14 will be addressed by the president, Rear Admiral P. S. Rossiter, Surgeon General of the Navy, and the following scientific program will be presented:

"Fleet Medicine." Capt. George A. Cottle, M.C., U. S. Navy.

"Eyes in Aviation." Maj. J. S. Chase, M.C., U. S. Army, Ret.

"Ears in Aviation." Lt. Col. I. H. Jones, Med. Res. U. S. Army.

"The Training of Medical Officers in a Major War Emergency." Col. Charles Decker, U. S. Army (D.E. O.), Ret.

"Physiotherapy in the Next War." Capt. Leroy Lowman, Med. Res. U. S. Army.

"Modern Typhoid Treatment." Lt. Comdr. Albert G. Bower, MC-V (S) U. S. N. R.

"Hospital Ships in the World War: Lessons to be Learned from Them." Capt. Lucius Johnson, M.C., U. S. Navy.

"Anesthesia in Shock." Lt. Albert Wineland, MC-V (S) U. S. N. R.

"Submarine Medicine." Lt. A. R. Behnke, M.D., U. S. Navy.

"Emergency Plastic Surgery." Chairmen's Address. Lt. Comdr. Howard L. Updegraff, MC-V (S) U. S. N. R.

"The Blood Sedimentation Rate in Dental Infections." Comdr. C. V. Rault, D. C., U. S. Navy.

"The Medical Specialists Units, U. S. N. R." Comdr. Albert Soiland, MC-V (S) U. S. N. R. Ret.

"Surgical Treatment of Low Back Pain." Guest Speaker. Col. Howard Naffziger, Med. Res. U. S. Army.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The third annual meeting of the Mississippi Valley Medical Society will be held at Quincy, Illinois, September 29, 30, and October 1. A most ambitious program has been arranged consisting of forty-eight teachers and clinicians who will give over sixty lectures and demonstrations in the three-day intensive session.

The first day will be an All-St. Louis program with eighteen clinicians on the program; on the second day there will be groups from Rochester and Chicago; on the third day the speakers will come from a wide territory. An innovation this year will be two short courses of instruction, (four hours each)—one on "Surgery of the Neck" by Dr. Lindon Seed, Associate Professor of Surgery, University of Illinois College of Medicine and another "interpretation of Clinical Laboratory Findings" by Dr. M. Pinson Neal, Professor of Pathology, University of Missouri School of Medicine.

At the annual banquet to be held on September 30, the speakers will consist of Dr. R. K. Packard, President, Illinois State Medical Society; Dr. D. S. Conley, President, Missouri State Medical Society and Dean of the University of Missouri School of Medicine; Dr. E. M. Myers, President of the Iowa State Medical Society; and Rev. A. M. Schwitalla, Ph.D., Dean of St. Louis University School of Medicine. There will be large technical and scientific exhibits. A complimentary stag supper will be given on September 29.

The meeting is open to all ethical physicians. A detailed program may be obtained from Dr. Harold Swanberg, Secretary, 209-224 W. C. U. Building, Quincy, Illinois.

PAN AMERICAN MEDICAL ASSOCIATION

The Association has chartered the S. S. Queen of Bermuda for its seventh cruise congress to Havana and the West Indies. The Bermuda sails January 15, 1938, from New York, returning the morning of January 31.

The Bermuda will serve as hotel for members during the five-day stay at Havana where scientific sessions with clinics will be held for three days for the various medical and dental specialties. Meetings will also be arranged at the other ports of call: Port-au-Prince,

Haiti; Trujillo City, Santo Domingo, and San Juan, Puerto Rico. The proposed trip offers attractions of scientific value as well as social contacts and relaxation.

Applications may be made to the Pan American Medical Association, 745 Fifth Avenue, New York City.

RESERVE OFFICERS' TRAINING COURSE

The ninth annual training course for Medical Department reservists of the Army and Navy will be held at the Mayo Foundation, Rochester, Minnesota, October 3 to 16, 1937.

This training course was first inaugurated by the Seventh Corps Area at the request of the Mayo Foundation to give training in military medicine to the young medical men connected with the foundation. Other reserve officers requested permission to enroll and to take advantage of the opportunity to attend the clinical presentations during the morning hours. Such permission was granted and attendance has become so increasingly popular that it is now necessary to limit enrollment.

The program will follow the plan of past years. The morning hours will be devoted entirely to professional work in special clinics and study groups. Officers in attendance may select the course they wish to follow from the wide variety of presentations offered. The afternoon and evening will be devoted to a medico-military program under the direction of the Surgeon of the Seventh Corps Area (Army) and the Surgeon of the Ninth Naval District (Navy).

This training is on an inactive duty status and is without expense to the government. Enrollment is open to all Army and Navy reservists of the Medical Departments in good standing. Applications should be submitted to the Surgeon of the Seventh Corps Area, Omaha, Nebraska, or to the Surgeon of the Ninth Naval District, Great Lakes, Illinois. Enrollment is limited to two hundred.

The Surgeons General of the Army and Navy have signified that they will attend and it is believed that the Surgeon General of the Public Health Service will also appear on the program.

KENT NELSON,
Colonel, Medical Corps, Surgeon.

POSTGRADUATE MEDICAL INSTITUTES UNIVERSITY OF MINNESOTA

1937-1938

The Center for Continuation Study of the University of Minnesota in coöperation with the Medical and Graduate Schools and the Minnesota State Medical Association will offer a series of postgraduate medical courses for practicing physicians from October, 1937, to May, 1938, inclusive. Each course will start the first Monday of the month and last one week.

Place

The didactic lectures and demonstrations will be given in the special class rooms of the Center for Continuation Study on the Campus where the postgraduate

physicians stay; the clinics will be held in the wards of the University of Minnesota Hospitals, Minneapolis General Hospital, Ancker Hospital, Saint Paul, and affiliated institutions.

Faculty

The faculty will be selected from the Medical School, the medical division of the Graduate School of Minneapolis and Rochester, Minnesota, the membership of the Minnesota State Medical Association and clinicians from other medical centers.

Registration

Any licensed physician who is a member of a county or state association or of the American Medical Association may register for the courses. Registration of physicians residing outside of Minnesota is welcomed. Each course will occupy the full time of the physician from Monday to Saturday, inclusive. Part time registration may be accepted in special instances, but only after special arrangement in advance.

Room and Board

Postgraduate physicians should plan on living in the dormitory of the Center for Continuation Study. A double room with bath may be obtained for \$6.25 a week for each person; a single room without bath for the same price. Other rates are accordingly low. Postgraduate physicians may bring their wives or other members of the family and live in the Center Building for the week. The dining room is located in the same building. Breakfast is 35 cents, luncheon 45 cents and dinner 65 cents. A large parking garage is located in the same building. Day time parking is 20 cents; 24 hour parking is 50 cents. The class rooms, also located in the building, are commodious and well arranged. One of the unique features of Minnesota's contribution to adult education is this building said to be the only one of its kind in this country.

Tuition

The tuition for the first course from October 4 to 9, is \$25.00. The registration fee of \$3.00 should be sent in advance in order to secure a place. Although the registration fee cannot be refunded, it will be applied on the tuition when the physician reports for class work. The tuition for each course will be announced in advance.

Disease of the Heart

With the coöperation of the Heart Committee of the Minnesota State Medical Association a special course in Disease of the Heart has been arranged for October 4 to 9, inclusive. It is planned primarily for those physicians who wish to know about the practical aspects of the diagnosis and treatment of disease of the heart and who do not have extraordinary facilities for the study of cardiac patients. Although emphasis will be placed on the clinical side, important contributions will be made by members of the Departments of Anatomy, Bacteriology, Pathology, Physiology and Pharmacology. The clinics will be held in the wards of the University of Minnesota Hospitals, Min-

Minneapolis General Hospital, Ancker Hospital, Saint Paul, and the Lymanhurst School for Rheumatic Children. Every variety of heart disease will be demonstrated, and each physician will be given an opportunity to examine the patients and discuss the treatment with the clinicians. Electrocardiographic methods and other refinements of diagnosis which have been developed in recent years will be described and demonstrated.

Certificate

Certificate of attendance will be issued by the University of Minnesota upon recommendation of the Chairman of the Institute and the Director of the Center for Continuation Study.

Advanced Registration

Please write at once if you are interested in the course on Disease of the Heart. The most successful of last year's courses were those in which the University learned in advance of the formation of the programs, the wishes of the physicians who planned to attend.

Future Courses

If you plan on taking any postgraduate work this year consider the possibilities at the University of Minnesota. We have tentatively planned a number of subjects, but we will be guided entirely by the desires of our physicians as to the final selection and content.

Information

Address all correspondence to the Director or Dr. William A. O'Brien, Medical Representative, Center for Continuation Study, University of Minnesota, Minneapolis. Physicians planning on coming during the Football Season should make their own arrangements for tickets with the Athletic Ticket Office.

AMERICAN UROLOGICAL ASSOCIATION

With a total of 856 persons registered, the thirty-fourth annual meeting of the American Urological Association, held June 28-July 1 in Minneapolis, achieved the distinction of being the largest convention ever held by that organization.

A special train from Chicago to Minneapolis brought the eastern and southern members who were able to make connections at that point and added to the enjoyment of the occasion.

The scientific program was an outstanding one, featuring the Guiteras Lecture given this year by Dr. William F. Braasch of Rochester, Minnesota, who spoke on "Clinical Data with Chronic Pyelonephritis," and the presidential address of Dr. Gilbert J. Thomas of Minneapolis, who presented a paper on "The Treatment of Renal Tuberculosis." The program was divided into three symposia on hydronephrosis, renal tumors, and chronic prostatitis.

Among the papers given at the meeting, five others were presented by Minnesotans. These were: "A Plastic Operation for Stricture at the Uretero-Pelvic Junction," Dr. Frederic E. B. Foley of St. Paul; "Operative Results in Hydronephrosis," Drs. Waltman Walters, Hugh Cabot, and James T. Priestley of Rochester;

"The Effects of Sudden Emptying of the Chronically Distended Bladder," Dr. Charles D. Creevy of Minneapolis; "Classification of Renal Tumors," Dr. Elexious T. Bell of Minneapolis; "The Relationship of Lesions of the Nose, Throat, Accessory Sinuses and the Eye to Chronic Pyogenic Prostatitis," Dr. Walter K. Haven of Minneapolis.

The sixty scientific exhibits exceeded in interest and number the displays of the previous meetings. Three were awarded prizes. First prize was given to Dr. Rubin H. Flocks of Iowa City, Iowa, for his display on "Arterial Distribution within the Prostate Gland"; second prize to Drs. Alexander Randall and Edward Campbell of Philadelphia, for "Origin of Renal Calculi"; third prize to Drs. Collier, Maddock, and Winslow of Ann Arbor, Michigan, for "Water Balance in Surgery." Honorable Mention was given to Dr. Frederic E. B. Foley of St. Paul for his exhibit on "Evolution of Pelvic-Uretero-Plastic Surgery."

Entertainment had been provided for the visitors, and Golf Day, on Monday, June 28, proved to be an outstanding event. Under the direction of Dr. John M. Culligan of Saint Paul, a Calcutta sweepstake was arranged. The gold cystoscope, a prize awarded annually, was given to Dr. John B. Lownes of Philadelphia, while the first cash prize for winning the Calcutta went to Dr. Stanley Maxeiner of Minneapolis.

While the men attended the scientific sessions, a special program had been arranged for the women. This included a tour of Minneapolis, Saint Paul, and the Minnetonka area with visits to the beautiful gardens in that district. Dr. H. E. Diessner of Minneapolis, and Dr. Philip F. Donohue of Saint Paul had charge of the Women's Entertainment Committee.

The leading entertainment feature of the meeting for the members and their families was the Ice Carnival presented in the Saint Paul Auditorium on Tuesday evening. The various amateur skating numbers were skillfully presented, and were dedicated to prominent members and officers of the Association.

The annual banquet was an event of Wednesday evening, being held in the Radisson Hotel, Minneapolis, preceded by the President's reception.

Many private social affairs were given for the members during their visit, and all of these events contributed to the general "holiday spirit."

On Thursday evening, special train took the members and their families to Rochester, where Friday was spent enjoying the special program arranged at the Mayo Clinic under Dr. William F. Braasch. At this time, Dr. William Mayo spoke to the delegates. Friday evening, the special train continued to Chicago, for those who were "homeward bound."

Officers of the Association elected during the meeting were: President, Dr. David W. MacKenzie, Montreal; President-Elect, Dr. Edgar Ballenger, Atlanta; Past-President, Dr. Gilbert J. Thomas, Minneapolis; Secretary, Dr. Clyde L. Deming, New Haven; Treasurer, Dr. James B. Cross, Buffalo.

Members of the Arrangements Committee who worked hard to make the meeting a success were: Dr. Franklin R. Wright, Honorary Chairman; Dr. Oscar

REPORTS AND ANNOUNCEMENTS

Owre, Vice-Chairman; Dr. Frederic E. B. Foley, Vice-Chairman; Dr. Ernest L. Meland, Secretary-Treasurer; Dr. Charles D. Creevy, in charge of the Scientific Exhibits; Dr. A. G. Wethall, in charge of Rail and Water Transportation; Dr. William F. Braasch, Dr. Philip F. Donohue, Dr. John M. Culligan, Dr. Richard B. Hullsiek, Dr. Walter B. Sexton; Dr. George Earl in charge of the Technical Exhibits; Dr. Hjalmer Simons; Dr. Theodore L. Stebbins in charge of Hotel Arrangements; Dr. Theodore H. Sweetser in charge of Motor Transportation; Dr. H. A. Diessner in charge of Women's Entertainment; Dr. Gilbert J. Thomas in charge of Entertainment.

INTER-STATE POSTGRADUATE MEDICAL ASSOCIATION

The International Assembly of the Inter State Postgraduate Medical Association of North America, under the presidency of Dr. John F. Erdmann of New York, will be held in the beautiful new public auditorium of St. Louis, Missouri, October 18, 19, 20, 21 and 22, with pre-assembly clinics on Saturday, October 16, and post-assembly clinics, Saturday, October 23, in the hospitals of St. Louis.

The aim of the program committee, with Dr. George Crile as chairman, is to provide for the medical profession of North America an intensive postgraduate course covering the various branches of medical science. The program has been carefully arranged to meet the demands of the general practitioner, as well as the specialist. Extreme care has been given in the selection of the contributors and the subjects of their contributions.

The St. Louis Medical Society will be host to the Assembly and has arranged an excellent list of committees who will function throughout the Assembly.

A most hearty invitation is extended to all members of the profession who are in good standing in their State or Provincial Societies to be present. A registration fee of \$5.00 will admit each member to all the scientific and clinical sessions.

For further information, write Dr. W. B. Peck, Managing Director, Freeport, Illinois.

PROGRAM

October 18, 19, 20, 21, 22, 1937

Pre-assembly clinics, October 16; Post-assembly clinics, October 23, St. Louis Hospitals.

ST. LOUIS MISSOURI

Monday, October 18
8:00 A.M.

Diagnostic Clinic: "Cosmetic Results in the Treatment of Cancerous Skin Lesions."

DR. JOSEPH ELLER, Professor of Clinical Dermatology and Syphilology, New York Postgraduate Medical School, Columbia University, New York, N. Y.

Diagnostic Clinic: "Hypertensive Heart Disease, Manifestations, Diagnosis, Treatment."

DR. FRED M. SMITH, Professor of Theory and Practice of Medicine, State University of Iowa College of Medicine, Iowa City, Iowa.

Diagnostic Clinic: "Deficiency Diseases."

DR. RUSSELL L. HADEN, Chief of Medical Division, Cleveland Clinic, Cleveland, Ohio.

Intermission to Review Exhibits

Diagnostic Clinic: "The Symptoms and Treatment of Injuries of the Spinal Cord."

DR. LOYAL DAVIS, Professor of Surgery, Northwestern University School of Medicine, Chicago, Illinois.

Diagnostic Clinic: "Types of Obesity and Their Treatment."

DR. REGINALD FITZ, Associate Professor of Medicine, Boston University Medical School, Boston, Mass.

Noon Intermission

1:00 P.M.

Diagnostic Clinic: "Surgical Treatment of Peptic Ulcer."

DR. DONALD C. BALFOUR, Professor of Surgery, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Address: "Ulcerative Colitis and Its Surgical Management."

DR. RICHARD B. CATTELL, Lahey Clinic, Boston, Mass.

Address: "The Roentgen Treatment of Infections."

DR. FREDERICK M. HODGES, Professor of Clinical Radiology, Medical College of Virginia, Richmond, Va.

Intermission to Review Exhibits

Address: "Meningitis Secondary to Disease of the Bones of the Skull."

DR. WELLS P. EAGLETON, Newark, New Jersey.

Address: "The Treatment of Urinary Infections in Infants and Children."

DR. JOHN R. CAULK, Professor of Clinical Genito-Urinary Surgery, Washington University School of Medicine, St. Louis, Mo.

Address: "Prenatal Care."

DR. OTTO H. SCHWARZ, Professor of Obstetrics and Gynecology, Washington University School of Medicine, St. Louis, Mo.

Address: "Granulomatous Lesions of the Intestines."

DR. CLAUDE F. DIXON, Assistant Professor of Surgery, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Dinner Intermission

7:00 P.M.

Address: "Recent Advances in the Field of Abdominal Surgery."

MR. W. HUGH COWIE ROMANIS, F.R.C.S., Surgeon to St. Thomas Hospital, London, England.

Address: "The Influence of Drugs upon the Physiology of the Failing Heart."

DR. MAURICE B. VISSCHER, Professor of Physiology and Head of the Department, University of Minnesota Medical School, Minneapolis, Minn.

Address: "The Mechanism and Treatment of Congestive Heart Failure."

DR. TINSLEY R. HARRISON, Associate Professor of Medicine, Vanderbilt University School of Medicine, Nashville, Tenn.

REPORTS AND ANNOUNCEMENTS

Address: "The Diagnostic Significance of Abdominal Pain."

DR. FREDERICK J. KALTEYER, Clinical Professor of Medicine, Jefferson Medical College, Philadelphia, Pa.

Address: "Carcinoma of the Stomach."

DR. WALTMAN WALTERS, Professor of Surgery, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Address: "Chronic Prostatitis."

DR. CYRUS E. BURFORD, Professor of Urology, St. Louis University School of Medicine, St. Louis, Mo.

Tuesday, October 19
8:00 A.M.

Diagnostic Clinic: "The Effects of General Infection on the Nervous System of Children."

DR. BRONSON CROTHERS, Assistant Professor of Pediatrics, Harvard University Medical School, Boston, Mass.

Diagnostic Clinic: "Spastic Paralysis."

DR. ALAN DEFOREST SMITH, Clinical Professor of Orthopedic Surgery, Columbia University College of Physicians and Surgeons, New York, N. Y.

Diagnostic Clinic: (Subject to be supplied).

DR. DEAN D. LEWIS, Professor of Surgery, Johns Hopkins University School of Medicine, Baltimore, Md.

Intermission to Review Exhibits

Diagnostic Clinic: "Pitfalls in the Diagnosis of Acute Abdominal Conditions."

DR. ALTON OCHSNER, Professor of Surgery, Tulane University of Louisiana School of Medicine, New Orleans, La.

Diagnostic Clinic: "Various Types of Edema and Their Treatment."

DR. DAVID P. BARR, Busch Professor of Medicine, Washington University School of Medicine, St. Louis, Mo.

Noon Intermission
1:00 P.M.

Diagnostic Clinic: "The Management of Compound Fractures of the Extremities."

DR. JOHN J. MOORHEAD, Professor of Clinical Surgery, New York Postgraduate Medical School, Columbia University, New York, N. Y.

Address: "Migraine."

DR. THOMAS CECIL HUNT, St. Mary's Hospital, London, England.

Address: "Cicatrizing Enteritis—A Neglected Clinical Entity."

DR. ELLIOTT C. CUTLER, Moseley Professor of Surgery, Harvard University Medical School, Boston, Mass.

Intermission to Review Exhibits

Address: "The Problem of Ocular Tuberculosis." The Joseph Schneider Foundation Presentation.

DR. ALAN C. WOODS, Acting Professor of Ophthalmology, Johns Hopkins University School of Medicine, Baltimore, Md.

Address: "Combined Abdomino-perineal Resection for Carcinoma of the Rectum."

DR. THOMAS E. JONES, Cleveland Clinic, Cleveland, Ohio.

Address: "Early Diagnosis and Treatment of Cancer of the Cervix."

DR. JOHN R. FRASER, Professor of Obstetrics and Gynecology, McGill University Faculty of Medicine, Montreal, Canada.

Address: (Subject to be assigned).

DR. MARION L. KLINEFELTER, St. Louis, Missouri.

Dinner Intermission
7:00 P.M.

Address: "Growth Disturbances of the Pelvis and Femur Resulting from Diseases of the Hip Joint."

DR. DALLAS B. PHEMISTER, Professor of Surgery, University of Illinois College of Medicine, Chicago, Ill.

Address: "The Post Hoc Ergo Propter Hoc Fallacy in Medicine."

DR. ROBERT D. RUDOLF, Professor Emeritus of Therapeutics, University of Toronto Faculty of Medicine, Toronto, Canada.

Address: "Allergy as Related to the Otolaryngologist."

DR. HAROLD G. TOBEY, Boston, Massachusetts.

Address: "Newer Methods in the Medical Treatment of Peptic Ulcer."

DR. HORACE W. SOPER, St. Louis, Missouri.

Address: "Subdural Hematoma."

DR. ERIC OLDBERG, Professor of Neurology and Neurological Surgery, University of Illinois College of Medicine, Chicago, Ill.

Address: "Toxemias of Pregnancy."

DR. NICHOLSON J. EASTMAN, Professor of Obstetrics, Johns Hopkins University School of Medicine, Baltimore, Md.

Wednesday, October 20
8:00 A.M.

Diagnostic Clinic: "Hay Fever."

DR. J. HARVEY BLACK, Professor of Preventive Medicine, Baylor University College of Medicine, Dallas, Texas.

Diagnostic Clinic: "Newer Methods of Vascular Surgery."

DR. WAYNE BABCOCK, Professor of Surgery and Clinical Surgery, Temple University School of Medicine, Philadelphia, Pa.

Diagnostic Clinic: "Bronchiectasis and Certain Phases of Tuberculosis."

DR. CHARLES R. AUSTRIAN, Associate Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore, Md.

Intermission to Review Exhibits

Diagnostic Clinic: "Dyspepsia, Organic Reflex and Functional."

DR. WALTER C. ALVAREZ, Professor of Medicine, University of Minnesota, The Mayo Foundation, Rochester, Minn.

Diagnostic Clinic: "Syphilis of the Central Nervous System."

DR. LEON H. CORNWALL, Associate Professor of Neurology, Columbia University College of Physicians and Surgeons, New York, N. Y.

Noon Intermission
1:00 P.M.

Diagnostic Clinic: "Abdominal Pain."

DR. IRVIN ABELL, Clinical Professor of Surgery, University of Louisville School of Medicine, Louisville, Ky.

Address: "Drugs in the Treatment of Heart Disease."

DR. ROBERT L. LEVY, Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons, New York, N. Y.

Address: "Diagnosis and Treatment of Brain Abscess."

DR. WALTER E. DANDY, Adjunct Professor of Neurological Surgery, Johns Hopkins University School of Medicine, Baltimore, Md.

Intermission to Review Exhibits

REPORTS AND ANNOUNCEMENTS

Address: (Subject to be supplied).

DR. CHARLES H. MAYO, Mayo Clinic, Rochester, Minn.

Address: "X-ray Treatment of the Pituitary Gland."

DR. MERRILL C. SOSMAN, Assistant Professor of Roentgenology, Harvard University Medical School, Boston, Mass.

Address: "Water Balance in Surgical Patients with Special Reference to Pre-and Post-operative Management."

DR. FREDERICK P. COLLIER, Professor of Surgery, University of Michigan Medical School, Ann Arbor, Mich.

Address: "Anxiety States in General Practice."

DR. WILLIAM J. KERR, Professor of Medicine, University of California Medical School, San Francisco, California.

Assembly Dinner

For members of the profession, their ladies and friends.

Informal

7:00 P.M.

DR. JOHN F. ERDMANN, Master of Ceremonies.

Addresses by eminent members of the profession and other distinguished citizens of the world.

Thursday, October 21

8:00 A.M.

Diagnostic Clinic: "Cirrhosis of the Liver."

DR. CHARLES A. ELLIOTT, Professor of Medicine, Northwestern University School of Medicine, Chicago, Ill.

Diagnostic Clinic: "Factors to be Considered in the Diagnosis of Diseases of the Genito-Urinary Tract."

DR. WILLIAM E. LOWER, Cleveland Clinic, Cleveland, Ohio.

Diagnostic Clinic: "Nephritis."

DR. JONATHAN C. MEAKINS, Professor of Medicine, McGill University Faculty of Medicine, Montreal, Canada.

Intermission for Review of Exhibits

Diagnostic Clinic: "Post-Operative Fistulae with Special Reference to the Gall-Bladder."

DR. JOHN F. ERDMANN, Attending Surgeon, New York Postgraduate Hospital and Medical School, Columbia University, New York, N. Y. President, Inter-State Post Graduate Medical Association.

Diagnostic Clinic: "The Relation of Diabetes to Arteriosclerosis."

DR. ELLIOTT P. JOSLIN, Clinical Professor of Medicine, Harvard University Medical School, Boston, Mass.

Noon Intermission

1:00 P.M.

Address: "A New Approach to the Treatment of Peptic Ulcer."

MR. WILSON HEY, F.R.C.S., Surgeon, Manchester Royal Infirmary, Manchester, England.

Address: (Subject to be supplied).

DR. WILLIAM J. MAYO, Mayo Clinic, Rochester, Minn.

Address: "The Adherent Posterior Duodenal Ulcer."

DR. J. WILLIAM HINTON, Associate Professor of Clinical Surgery, New York Postgraduate Medical School, Columbia University, New York, N. Y.

Address: "The Prevention and Treatment of the Erythema."

DR. JOHN A. TOOMEY, Associate Professor of Pediatrics, Western Reserve University School of Medicine, Cleveland, Ohio.

Intermission to Review Exhibits

Address: "High Saphenous Ligations Plus Injection of Varicose Veins of the Leg."

DR. WILLIAM D. HAGGARD, Professor of Surgery, Vanderbilt University School of Medicine, Nashville, Tenn.

Address: "Endocarditis."

DR. RALPH A. KINSELLA, Professor of Internal Medicine, St. Louis University School of Medicine, St. Louis, Mo.

Address: "Recent Advances in Hormone Therapy as Applied to Gynecological Problems."

DR. EMIL NOVAK, Associate in Gynecology, Johns Hopkins University School of Medicine; Associate Professor of Obstetrics, University of Maryland School of Medicine, Baltimore, Md.

Dinner Intermission

7:00 P.M.

Address: "The Surgical Treatment of Diverticulitis."

DR. FRED W. RANKIN, Lexington, Kentucky.

Address: "Diagnosis and Treatment of Displacement of the Uterus."

DR. WILLIAM H. VOGT, Director of the Department of Gynecology and Obstetrics, St. Louis University School of Medicine, St. Louis, Mo.

Address: "The Relation of the Development of the Child to the Endocrine System."

DR. CHARLES R. STOCKARD, Professor of Anatomy, Cornell University Medical College, New York, N. Y.

Address: "Indications for Exploratory Laparotomy."

DR. WILLIAM T. COUGHLIN, Professor of Surgery, St. Louis University School of Medicine, St. Louis, Mo.

Address: "Tumors of the Kidney."

DR. HERMAN L. KRETSCHMER, Clinical Professor of Surgery, Rush Medical College, University of Chicago, Chicago, Ill.

Friday, October 22

8:00 A.M.

Diagnostic Clinic: "Surgical Lesions of the Common and Hepatic Ducts."

DR. FRANK H. LAHEY, Director of Surgery, Lahey Clinic; Surgeon to the New England Baptist Hospital and the New England Deaconess Hospital, Boston, Mass.

Diagnostic Clinic: "The Diagnosis and Management of Cardiac Arrhythmias."

DR. ROY W. SCOTT, Professor of Clinical Medicine, Western Reserve University School of Medicine, Cleveland, Ohio.

Diagnostic Clinic: "Chest Surgery."

DR. EVARTS A. GRAHAM, Bixby Professor of Surgery, Washington University School of Medicine, St. Louis, Mo.

Intermission for Review of Exhibits

Diagnostic Clinic: "The Medical Treatment of Arthritis."

DR. CYRUS C. STURGIS, Professor of Internal Medicine, University of Michigan Medical School, Ann Arbor, Mich.

PROCEEDINGS—MINNESOTA ACADEMY OF MEDICINE

agnostic Clinic: "Diagnosis and Management of Diseases of the Thyroid Gland."

DR. GEORGE CRILE, Cleveland Clinic, Cleveland, Ohio.

Noon Intermission

1:00 P.M.

Address: "The Surgical Treatment of Arthritis."

DR. PHILIP D. WILSON, Clinical Professor of Orthopedic Surgery, Columbia University College of Physicians and Surgeons, New York, N. Y.

Address: "Diet of Infants."

DR. CHARLES HENDEE SMITH, Professor of Pediatrics, University and Bellevue Hospital Medical College, New York, N. Y.

Address: "The Relation of the Pituitary, Thyroid, Adrenals, Liver, and Pancreas to Hyperinsulinism and Spontaneous Hypoglycemia."

DR. SEALE HARRIS, Professor Emeritus of Medicine, University of Alabama School of Medicine, Birmingham, Ala.

Address: "Relief of Intractable Pains by Subarachnoid Alcohol Injections, Nerve Blocks, Root Sections, and Chordotomy."

DR. W. MCK. CRAIG, Professor of Neurosurgery, University of Minnesota Graduate School of Medicine, Mayo Foundation, Rochester, Minn.

and

DR. ALFRED W. ADSON, Professor of Neurosurgery, University of Minnesota Graduate School of Medicine; Senior Neurosurgeon of Mayo Clinic, Rochester, Minn.

Intermission for Review of Exhibits

Address: "Diagnosis and Treatment of Pneumonia."

DR. RUSSELL L. CECIL, Professor of Internal Medicine, New York Polyclinic Medical School and Hospital, New York, N. Y.

Address: "The Significance of Hoarseness and Local Discomfort in Laryngeal Disease."

DR. GABRIEL TUCKER, Professor of Clinical Bronchoscopy and Esophagoscopy, University of Pennsylvania School of Medicine, and Professor of Bronchoscopy and Laryngeal Surgery, Graduate School of Medicine, University of Pennsylvania, Philadelphia, Pa.

Address: "The Surgery of Hermaphroditism and associated Adrenal Diseases."

DR. HUGH H. YOUNG, Professor of Urology, Johns Hopkins University School of Medicine, Baltimore, Md.

Address: "The Menace of Post-Operative Adhesions."

DR. FRED W. BAILEY, St. Louis, Missouri.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The Southern Minnesota Medical Association elected Dr. Albert E. Meinert of Winona president for the coming year; Dr. W. A. Fansler of Minneapolis, first vice president; Dr. Albert Fritsche of New Ulm, second vice president; and Dr. Nelson W. Barker of Rochester, secretary-treasurer.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of May 12, 1937

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 12, 1937. The meeting was called to order at 8 p. m. by the president, Dr. L. M. Jones. There were fifty-one members and one guest present.

The scientific program followed.

TUMORS OF THE JEJUNUM

JAMES A. JOHNSON, M.D.

Minneapolis

Abstract

Tumors of the jejunum, both malignant and benign, are comparatively rare. Carter states that malignant tumors of the jejunum comprise approximately 1 per cent of all of those occurring in the gastro-intestinal tract. Benign growths are likewise rare and consist chiefly of adenomas, myomas and angiomas. Textbooks on surgery contain very little, if anything at all, on this subject except to mention that they are very rare. In 1927 Hellstrom reported seventy-three cases of cancer of the small bowel but did not mention their location. In 1936 Nettrour, Webber and C. W. Mayo found only thirty-one cases of carcinoma of the jejunum in the files of the Mayo Clinic. Geschickter, from the Surgical

Pathologic Laboratory of Johns Hopkins, reported thirty-nine cases of benign tumors of the small bowel with sixteen cases of carcinoma, four of which were in the jejunum. In the University of Minnesota Pathologic Laboratory files were found only two cases of cancer of the jejunum in a total of 20,000 complete autopsies in adults. In reviewing case reports, it is evident that many of these growths occur very near the ligament of Treitz and become a difficult surgical problem. It is my purpose, therefore, to discuss in particular the surgical treatment and to report four operated cases with successful termination.

There are three types of carcinomata of the jejunum: (1) the constricting or stenosing type, (2) the flat ulcerating type, and (3) the polypoid type. Sarcoma may arise from the submucous, muscular or subserous coats and tends to assume an external growth, either solid, but more often cystic, with areas of degeneration. Benign tumors consist chiefly of adenomas, single or multiple, which are not infrequently responsible for intussusception. The symptoms are of an indefinite nature, often consisting of vague gastric distress with weakness, loss of weight and fatigue. If the growth progresses to stenosis, there is of course evidence of high intestinal obstruction. Diagnosis is difficult and depends upon the amount of obstruction present. Ob-

struction in this locality, if marked, may produce some dilatation of the proximal loop of the duodenum or jejunum and this dilatation may become an important x-ray finding. If there is a stenosing growth, it can be recognized as well here as in any other portion of the bowel. Very few cases, however, are diagnosed before operation.

If complete obstruction has been present for some time, it is important to prepare the patient before operation is undertaken. This can best be done by emptying the stomach with nasal suction and administering glucose and saline intravenously. If anemia is pronounced, a blood transfusion should be given. The operation consists of thorough removal of the growth, together with proper restoration of function by an end-to-end or side-to-side anastomosis. This is not especially difficult when the tumor is located far enough down so that a side-to-side anastomosis can be done. When it is located at or so near the ligament of Treitz that this becomes impossible, the restoration of the lumen often becomes a difficult problem, because the proximal loop is usually very dilated and so edematous that an end-to-end anastomosis cannot be done. R. Franklin Carter, in the *Annals of Surgery* for December 1935, recommends a side-to-side anastomosis of the distal end of the jejunum to the third portion of the duodenum. This appeals to me as a splendid procedure but it may be difficult in some instances, particularly where the duodenum is not much dilated.

I wish to present here another method. Recently I encountered an annular carcinoma of the jejunum, located so near the ligament of Treitz that only a small stump of the proximal loop remained when the growth was adequately removed. The proximal loop was so dilated and hypertrophied that an end-to-end anastomosis could not be done. I decided to employ a large, round Murphy button. This was easily inserted and was reinforced by two layers of catgut in the serosa and muscularis, thus producing a tight, secure, end-to-end enclosure. The postoperative convalescence was uneventful. The patient has no symptoms and shows no evidence of obstruction by x-ray at present, and has regained his normal weight. I recommend this method in cases where the tumor is located so near the ligament of Treitz that a side-to-side anastomosis is impossible or when the proximal loop is so dilated and edematous that an end-to-end union becomes unsafe.

The immediate operative mortality in removing tumors from the jejunum is high. Hellstrom in 1927 reported a primary mortality in resected cases of 36.2 per cent. R. Franklin Carter in 1935 reviewed thirty cases, twenty-four of which had resections with a primary mortality of 43.4 per cent. The mortality was highest in those in which an end-to-end anastomosis was done.

Case 1.—On February 27, 1935, I was called in consultation by Dr. H. W. Quist, to see Mrs. G. H., aged thirty-five, who had been admitted to the hospital February 23 with a severe attack of upper abdominal pain which was thought to be gallstones. She had had previous attacks. She continued to vomit, however, and a couple of days later she passed a bloody stool. On the

same day a mass was felt in the left upper abdomen. A small amount of barium was given and showed a dilatation of the duodenum and jejunum. An obstruction of the jejunum was diagnosed and operation was advised. At operation, about 4 inches below the ligament of Treitz there was an intussusception of gangrenous bowel. A resection was done with side-to-side anastomosis. On opening the bowel a papillary growth with a necrotic polyp was located on the bowel wall. Pathological report showed that this was an adenomatous non-malignant growth. She was given a blood transfusion and had an uneventful recovery and has been well to date.

Case 2.—Mr. G. F., aged sixty-three, gave a negative past history. His present trouble dates back about one and a half years, during which time he had had indefinite symptoms of indigestion with epigastric distress. He had lost 40 pounds in weight. He had previously had two x-ray studies of his stomach elsewhere and diagnosis of duodenal ulcer had been made. Treatment had been given without any relief. He was admitted to the Eitel Hospital on September 13, 1936. X-rays of the gastrointestinal tract revealed considerable dilatation of the duodenum, which extended to about 3 inches beyond the ligament of Treitz, at which point an annular constricting growth was located, and Dr. Unger made a diagnosis of carcinoma of the jejunum with partial obstruction. Operation on September 18, 1936, revealed a large, annular carcinoma of the jejunum three and one-half inches from the ligament of Treitz. The growth was almost completely obstructing the bowel. The proximal loop was much dilated and edematous. The mesenteric glands were involved. The growth was widely resected and an end-to-end anastomosis was made with a large round Murphy button. His convalescence was uneventful. He has regained his normal weight and has no symptoms. Pathologic report by Dr. O'Brien revealed adenocarcinoma of the jejunum with metastasis of the regional lymph nodes.

Case 3.—Mrs. L. B., aged fifty-seven, had been treated for secondary anemia for the past eighteen months. She had had during the past year two attacks of abdominal distention with cramps lasting for two days. After the first attack in April, 1936, she felt a mass in the left lower abdomen. The last attack in September was severe. She consulted her family physician, Dr. Oliver Porter, who immediately sent her in for examination. There was a movable mass in the left abdomen which, when the patient was lying down, could be felt in the upper abdomen and when the patient was standing could be felt below the navel. A barium enema was given. There was no evidence of any tumor in the colon. Operation October 15, 1936, at which time a large partly cystic tumor was found in the jejunum about 7 inches below the ligament of Treitz. There were metastases in the liver around the gallbladder. There were numerous glands in the mesentery involved. The growth was widely resected and a side-to-side anastomosis was done. Pathological report by Dr. O'Brien showed that the tumor was a sarcoma, presumably a neurosarcoma. Postoperative convalescence was uneventful. She has been in fair health and relieved of her previous symptoms.

Case 4.—Mrs. L. B., aged thirty-six, admitted to Eitel Hospital on January 8, 1937. There was a history of attacks since June, 1936, which consisted of dull pain in the region of the navel with epigastric distress. Attacks had gradually increased in severity and lasted about three hours. At various times she vomited. Between attacks she had much epigastric distress and feared to eat, losing 20 pounds in weight. X-rays of the gallbladder showed impaired function with a single stone. Gastro-intestinal x-ray showed a normal stomach and duodenum. There was also an irregular dis-

tribution of barium in the small bowel with some areas of dilatation and stasis. X-ray of the colon was normal. Operation January 22, 1937, revealed a thick-walled gallbladder, containing a solitary stone. Cholecystectomy was done. The entire bowel was then carefully examined. At a point about 4 feet from the ligament of Treitz there was a movable mass in the bowel. The bowel was opened and an ulcerating adenoma was exposed, which looked malignant. The growth was resected and a side-to-side anastomosis was done. Pathologic report by Dr. O'Brien showed no evidence of malignant changes but revealed a large polyp with ulceration. Convalescence was uneventful. She has been relieved of all her previous symptoms and regained her normal weight.

Summary

1. Tumors of the jejunum probably comprise about 1 per cent of all those occurring in the gastro-intestinal tract.
2. When an unexplained high obstruction is evident and no cause can be found in the pylorus or duodenum, it should be remembered that tumors may be present in the jejunum.
3. A simple, safe method of end-to-end anastomosis is here recommended in cases that are located so near the ligament of Treitz that the usual operative procedures are either too dangerous or impossible.

Discussion

DR. A. R. COLVIN, Saint Paul: I just want to emphasize one point made by Dr. Johnson and which he has emphasized, i.e., in case of gastro-intestinal hemorrhage, if, at operation, the cause which has been suspected is not evident, to make a thorough search for causes which maybe have not been suspected.

I recently saw a patient who had an inoperable carcinoma of the jejunum. He had had several transfusions and finally a gastro-enterostomy, under the belief, evidently, that the hemorrhage was due to peptic ulcer. The autopsy revealed a carcinoma which had become spontaneously anastomosed with another coil and was clearly inoperable. The story of bleeding had extended over several years.

DR. ARNOLD SCHWYZER, Saint Paul: I want to congratulate Dr. Johnson for this group of interesting cases. These cases are rare and that he should have had four of them in a short time is quite an experience. I have seen only one and detected that one by accident. In the course of a gallstone operation we noticed a thickening which was rather circular in the lower duodenum or upper ileum. I resected and the patient recovered from the operation but gradually lost ground and later died from carcinoma.

This presentation was very good and the microscopic slides excellent. I am glad the Murphy button has come into its own again. I have used the Murphy button every now and then right along and feel just as Dr. Johnson does, that where there is difficulty in suturing, the Murphy button will get you out of some tight places. However, when there is a large upper gut end and a smaller lower one, there is great danger of the Murphy button staying there for a long time. For such a case I have a Murphy button on which the two halves are a little different in size. The half with the smaller diameter is put in the upper gut and the larger one into the lower gut. If I do not feel quite safe as to the union on account of tension, I make an invagination stretching the lower narrower part of gut over the button for half an inch or one inch above and secure it there with a couple of continuous or interrupted sutures. Then I know the button must go down. I think that is a worthwhile point.

DR. JOHN NOBLE, Saint Paul: I am rather hesitant to discuss the question of malignancy of the small intestines because of my meager first-hand experience. I feel that statistics on the matter of frequency have perhaps been distorted and I am perfectly in agreement with Dr. Johnson as far as these figures are concerned. Yet, in my experience, I have seen only three cases of malignancy of the small intestine. The first case was a gelatinous carcinoma of the duodenum; the second case was a leiomyoma-sarcoma of the jejunum and the third case was mentioned by Dr. Colvin. I think the discrepancy in statistics may be due to the fact that the case reports of malignancy of the small intestine are more likely to be published than are reports of carcinoma of the stomach, for instance. In the first case mentioned, the patient's condition warranted no surgical interference. The second case presented a picture of low-grade chronic partial intestinal obstruction. Efforts were made to localize the point of obstruction but these were unsuccessful and the patient died before any surgical exploration could be done. This tumor proved to be a leiomyoma-sarcoma situated in the jejunum. I know this type of tumor is usually benign and that it is the most common tumor found in the stomach. It also occurs in the small intestine, however, and in this instance the lesion was malignant. Here, there was definite evidence of local invasion but no distant metastases were found. The third case was the one Dr. Colvin mentioned. The picture was that of a high intestinal obstruction and the patient had had previous gastric surgery. The tumor at autopsy was found to be adenocarcinoma of the jejunum, in which, due to adhesions and infiltration of the several loops of the small intestine, anastomoses had occurred. The lesion was grossly mistaken for an inflammatory mass and not until microscopic sections were studied was it discovered that the lesion was adenocarcinoma. In none of the three cases was clinical diagnosis made. These are the only three cases I have seen first-hand. Recently, I have been impressed with the newer methods in the x-ray diagnosis of tumors of the small intestine and I feel that as this technic is developed we will be able to diagnose these lesions more frequently and that our accuracy will be somewhat comparable to the diagnosis of the lesions in the stomach and colon.

DR. R. G. ALLISON, Minneapolis: X-ray diagnosis of tumors of the small intestine can readily be made, with even a mild degree of obstruction, by a barium meal. In cases which present themselves with symptoms of obstruction, a flat film of the abdomen should always be made as a preliminary measure. If dilated loops of small bowel are found, barium should not be administered. If, however, no dilated loops are found, it is perfectly safe to administer a barium and water mixture.

DR. JOHNSON, in closing: I want to thank the gentlemen for their interesting discussions. I would like to see the button Dr. Schwyzer has been using. I have used the Murphy button for many years and have never seen one that failed to pass. If such cases have been reported, it is quite probable that the button has been defective or inserted wrong; the male portion of the button should always be inserted in the proximal loop. During the four years I was with Dr. Murphy, I never saw him use anything but a button for gastro-enterostomy except in a case of a small child. They all passed without any difficulty. The button usually comes loose in about ten days and then passes so silently that the stool has to be watched carefully to recover it. The button used in this case was so large that it became lodged in the rectal pouch. I have never before had to remove one.

Tumors of the jejunum, of course, are a rare condition, but I want to leave with you two thoughts con-

cerning them. First, if a patient is being operated on for a lesion in the pylorus or duodenum, especially of an obstructing type, and none is found, it would be well to remember that it might be in the jejunum and, accordingly, do not forget to explore it. Second, if one is confronted with a difficult anastomosis in the small bowel, such as occurs at or very near the ligament of Treitz, it is well to remember that a Murphy button can often be used to advantage.

ADAMANTINOMA WITH CYST OF LOWER JAW

A. R. COLVIN, M.D.

Saint Paul

An enumeration of the various names given to adamantinoma is an indication of the direction in which a knowledge of these tumors has developed.

1. Epithelioma adamantinoma
2. Central epithelioma
3. Cystoma
4. Multilocular cystoma
5. Proliferating cysts of the jaw
6. Embryo-plastic adamantome
7. Central paradental cyst
8. Central cystadenoma
9. Central papilloma of the jaw
10. Adamantine adenoma

At the present time they are designated "Solid Adamantinoma" and "Cystic Adamantinoma." In the early stages of their development they may be confused with root cysts or follicular cysts; in other words, they may present as small cysts.

These cysts have frequently been operated on under the belief that they were root cysts. This was my experience in the case I am reporting, except that I operated on a cyst twice before recognizing the real nature of the trouble. Because of the, at times uncertain, nature of the behavior of these tumors, I am reporting a case demonstrating the long-drawn-out history and apparently benign course. They are almost always found in the lower jaw and have their origin from the germ cells of the enamel epithelium or from the epithelial remnants of this structure. They grow slowly and distend the jaw more than they destroy it. They may involve the entire half of the jaw, and, while usually possessing all the characteristics of a benign tumor, they must often be treated as malignant because of the continuous growth of tumor cells remaining after incomplete removal. Heath reported a case recurring, after thirty-five years, and one case has been reported as recurring after forty-five years. They may appear at any time of life. Perthes says they never metastasize. Ludek reports a case with undoubted metastases in the lung. Adamantinoma may vary greatly in size; at times growing as large as a child's head.

Histologically, there is seen a large amount of connective tissue stroma in which are found epithelial cords and islands resembling the structures found in the germ cells of the enamel of the tooth follicle. This arrangement is found in the walls of the cysts as well as in the solid tumors.

Differential diagnosis is uncertain not only in the early stages of root cysts and follicular cysts, but also in later stages. The central fibroma presents difficulties not only clinically but also radiographically. The x-ray is important not only for diagnosis but to establish as accurate a plan of operative procedure as possible so that, because of the great tendency to recurrence, it can be determined whether it may not be possible to operate radically and still leave a sufficient ridge of the lower border to maintain the form and support of the jaw. Recurrences may, however, be a long time delayed (forty-five years) and so it may be advisable to remove all suspicious tissue before resorting to exarticulation, and observe the case frequently for recurrences, hoping that they may be long delayed.

I wish to report the following case of adamantinoma:

The patient, a female aged forty-two, was first seen in 1921 with a history of a painless lump in her lower jaw. Believing this to be either a root or follicular cyst, it was operated by removing the outer wall and curetting out the lining membrane. For a recurrence in 1923 the same procedure was carried out. In 1926, at operation for another recurrence in which the cyst was clinically about the size of an almond nut, on removing the outer wall there were now found several smaller cysts. These were opened in such a manner that an open cavity was made. This healed over, but recurrence took place about one year later (1/12/28). At this time an incision was made in the submaxillary region and the cyst exposed extra-orally. The outer wall was removed, revealing a multilocular cyst. Cavities extending from the lower end of the ascending ramus forward to the lateral incisor were found, and these cyst walls were removed with burr and curette.

In November, 1929, another recurrence was evident and again the bone was approached in the same manner; the lateral incisor, canine and bicuspid were removed and, with rongeur forceps and burr, the bone was removed leaving only a ridge of the lower margin of the jaw about half an inch thick.

It is now seven years since this was done and there is no evidence of recurrence at this time.

Osteitis fibrosa, and bone granuloma or osteodystrophia fibrosa beginning in the central part of the jaw, of doubtful origin, and consisting of at first loose and later much firmer fibrous tissue, presents difficulties in diagnosis also; and histological examination must in all of these conditions furnish the deciding evidence in the differentiation from adamantinoma and, indeed, from all tumors of the jaw. In this connection, to illustrate the difficulties of diagnosis and the necessity for making use of every form of information to be gained from clinical, radiographic, histological and the findings of gross pathology as exposed at operation, I would like to refer to the following case:

The patient, a female aged eighteen, first noticed a swelling of the gums over the upper jaw two years ago. This increased gradually for over a year. Two months ago she was hit over the left side of the face by a horse suddenly jerking its head in her direction. She says the swelling increased more rapidly since then. She had not at any time suffered any pain. There was marked fullness of the cheek on the left side; just above the lateral incisor was a firm elastic mass about the size of a walnut. There was a fullness of the left side of the hard palate.

At operation an incision was made over the prom-

ment mass. After reflecting the mucous membrane, the mass was exposed and found to have destroyed the outer wall of the antrum. The tissue comprising the mass was of a very tough fibrous consistency and filled the entire antrum, so that, in removing it, it was found that the walls of the antrum in various places were destroyed; and on attempting to remove all of the tissue comprising the mass, one felt that this tissue became part of the wall very much like the insertion of the larger tendons. It soon became apparent that if the tissue was malignant (which it did not seem to be), and, having perforated the walls of the antrum in various places so that its complete removal was impossible, radical resection of the upper jaw would still fail to remove all diseased tissue; and if it were not malignant further damage to the adjacent structures (the contents of the orbit, for instance) was inadvisable. Recovery from the operative attack was uneventful and she was given x-ray treatment. When seen a few weeks ago there were no clinical evidences of recurrence. A radiograph still shows a dense shadow in the antral region.

Pathological Report (DR. JOHN NOBLE): "The specimen consists of a large mass of small, irregular fragments of tissue of varying size all of which have about the same gross appearance and structure. There appears to be an outer, quite friable, papillary surface and central portion which is quite fibrous and tough in consistency. It cuts with increased resistance. All of the tissues present the same gross appearance.

"**Microscopic:** Sections of the tumor of the antrum and maxilla show it to be composed of masses of dense hyaline connective tissue showing large amounts of collagen fibril. The bulk of the tumor is composed of this tissue but there are some small areas of connective tissue which are somewhat more cellular. Throughout the stroma small spicules of bone and osteoid tissue are scattered at irregular intervals. There is no evidence of epithelial tissue and no evidence of malignancy is seen. From the gross picture and from previous experience with similar lesions in other bones, a very guarded prognosis should be given, however. The histologic picture is that of an osteitis fibrosa of the solid type."

Diagnosis: Osteitis fibrosa.

The conditions described above conform more nearly to the condition defined as "bone granuloma" and, while isolated cases have been reported, it is still unsettled as to whether it is of inflammatory or neoplastic nature. Perthes comments on the fact that it has not previously been described in systematic treatises of the jaw and that in the former edition of his own work it was not referred to; but now, in his newest work, he is evidently endeavoring to arrange some of these conditions under the heading of "Granuloma" or "Osteodystrophia Fibrosa." With all of these facts in mind, one would scarcely have been justified in doing more than was done in this case.

Discussion

DR. JOHN NOBLE, Saint Paul: These two cases reported by Dr. Colvin have been interesting to me, particularly the second one. In the first case I studied only the sections and, as shown on the lantern slides, the tumor was adamantinoma. These tumors arise from the periodental epithelium and they take on various

forms. The tumor can present a picture similar to the one shown forming numerous cysts, or it can be a solid adenocarcinoma. Squamous cell tumors are also seen and one form is indistinguishable from a sarcoma, being composed of spindle cells. These tumors are characteristically slow growing and the difficulty from the standpoint of surgical treatment is the matter of complete removal. They frequently recur but seldom metastasize. Distant metastases have, however, been reported in lung and cervical lymph nodes. The second case I saw clinically with Dr. Colvin. She was a young girl and the tumor from an x-ray standpoint was malignant. As far as could be determined, the tumor arose from the antrum or the maxilla. It invaded the walls of the antrum and the orbit. We came to the conclusion, after microscopic study of the tumor, that it was an osteitis fibrosa of the solid type. In long bones we know that this lesion occurs in two forms—the cystic and the solid type. This lesion resembled more closely the solid type but had none of the giant cells so frequently seen. We know that osteitis fibrosa may take one of three courses. It has been known to subside without any therapy. It can be eradicated by curetting the cysts. The lesion is closely related to giant cell tumors of the bone and malignant changes have been reported following this type of lesion. The thing that interested me particularly in this case was the matter of the fundamental etiology of the disease. Did it represent a true neoplasm or was the lesion simply a proliferative inflammation? We know that chronic inflammatory processes in the antrum are extremely frequent. This type of reaction to inflammation must be very rare. The fact that bone destruction occurred need not be evidence against the inflammatory nature of the lesion. We know that certain proliferative inflammatory processes of the bone can be destructive. It will be interesting to follow the eventual outcome in this instance.

DR. R. G. ALLISON, Minneapolis: The case Dr. Colvin exhibits, with involvement of the antrum, gives the characteristic x-ray appearance of a malignant lesion. I think it extremely rare to see chronic involvement of the antrum progress either to destruction of bone or to a wide-spread osteomyelitis. These tumors are much more common in the lower jaw.

DR. KENNETH BULKLEY, Minneapolis: In connection with this case of Dr. Colvin's, I would like to report a case of adamantinoma of the lower jaw which went on eventually to death. The man was a first cousin of Dr. Janeway and a brother-in-law of mine. Shortly after graduation from medical school he developed a mass in the lower jaw. He was operated on three times, each time with recurrence, and perhaps two or three years between each recurrence. Finally he went to Baltimore and saw Dr. Bloodgood who did a resection of the lower jaw. The laboratory diagnosis was made in this case by Dr. Ewing. This man lived to be about fifty-four. He eventually developed local extension into the nasopharynx and a trifacial neuralgia for the relief of which Dr. Harvey Cushing operated on the gasserian ganglion. The process finally extended through the base of the skull with secondary infection and meningitis. This was a typical case of adamantinoma which continued over a period of twenty-five years after the first local incision in the lower jaw.

The meeting adjourned.

A. G. SCHULZE, M.D., *Secretary*

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

TREATMENT BY DIET. Clifford J. Barborka, B.S., M.S., M.D., D.Sc., F.A.C.P. Department of Medicine, Northwestern University Medical School, Chicago, etc. Third Edition. 642 pages. Illus. Price, \$5.00, cloth. Philadelphia: J. B. Lippincott Co., 1937.

MANUAL OF THE DISEASES OF THE EYE. For Students and General Practitioners. Charles H. May, M.D. Consulting Ophthalmologist to Bellevue, Mt. Sinai and French Hospitals, New York; formerly Chief of Clinic and Instructor in Ophthalmology, Medical Department Columbia University, etc. 15th Edition. 498 pages. Illus. Price, \$4.00, cloth. Baltimore: Wm. Wood & Co., 1937.

AN INTRODUCTION TO DERMATOLOGY. Richard L. Sutton, M.D., Sc.D., LL.D., F.C.S. (Edin.), Professor of Dermatology, University of Kansas School of Medicine, and Richard L. Sutton, Jr., A.M., M.D., L.R.C.P. (Edin.), Instructor in Dermatology, University of Kansas School of Medicine. Third Edition. 666 pages. Illus. Price, \$5.00, cloth. St. Louis: C. V. Mosby Co., 1937.

OBSTETRIC AND GYNECOLOGIC NURSING. Frederick H. Falls, M.S., M.D., F.A.C.S., Professor of Obstetrics and Gynecology, University of Illinois College of Medicine, etc., and Jane R. McLaughlin, B.A., R.N., Supervisor of Department of Obstetrics and Gynecology, Research and Educational Hospital, University of Illinois College of Medicine. 492 pages. Illus. Price \$3.00, cloth. St. Louis: C. V. Mosby Co., 1937.

THE LABORATORY DIAGNOSIS OF SYPHILIS. Harry Eagle, M.D., Past Asst. Surg. U. S. Public Health Service, Washington, D. C.; Lecturer in Medicine, Johns Hopkins University Medical School, Baltimore, Md. 440 pages. Illus. Price, \$5.00. St. Louis: C. V. Mosby Co., 1937.

"The Laboratory Diagnosis of Syphilis" presents a detailed and practical consideration of the various diagnostic tests on syphilitic blood and spinal fluid and is of special interest to serologists and immunologists. The text begins with a brief general discussion of the serologic tests and the terms used in describing them.

Seven chapters are then spent in discussion of the Wassermann reaction alone. The properties, preparation and standardization of complement, antigen, serum, and the hemolytic system are given. The mechanism of the test, the sources of error in performing it and the relative merits of various types of Wassermann technics are discussed in a scholarly manner. Of particular interest to laboratories is the chapter in which three Wassermann technics are carefully outlined.

Part II of the text is devoted to the flocculation tests for syphilis and a brief historical sketch of their

development is given. The procedures for seven modern flocculation tests are also stated (Eagle, Hinton, Kahn, Kline, Meinicke, Müller-Ballungs, Lentochol and Citochol, and Sachs-Georgi-Witebsky).

Adequate portions of the book are utilized for the discussion of spinal fluid examinations, and the clinical evaluation of serologic tests. In conclusion, a number of appendices include considerations of the daily routine in a large serologic laboratory, problems in the sero diagnosis of syphilis and other interesting features.

The book, of course, is of greater value to the laboratory worker than to the clinician. It is well written and there is no lack of detail.

CARL W. LAYMON, M.D.

INFANTILE PARALYSIS AND CEREBRAL DIPLEGIA. Methods used for the Restoration of Function. Elizabeth Kenny. With Foreword by Herbert J. Wilkinson, Professor of Anatomy and Dean of the Faculty of Medicine, University of Queensland. 125 pages. Illus. Price, £1/1/-, cloth. Sydney, Australia: Angus & Robertson, 1937.

While Sister Elizabeth Kenny is the author of the principal part of the text concerning anterior poliomyelitis and spastic paralysis of infants, Dr. Herbert J. Wilkinson, Anatomist, contributes a seventeen page Foreword and Dr. J. V. Guinane seven pages of "Introductory Notes."

In the Foreword it is stated that Sister Kenny . . . "is able to bring about improvement in many cases abandoned by the profession and has obtained more rapid improvement in early cases not previously treated"; and, furthermore: . . . "Sister Kenny is to be highly commended for her patient persistence over many years, but judgment of the complete merits of her work must be left to the future."

The author in her Preface states that before being received in the clinic the consent of the medical officer to supervise the case is required and a medical report on the condition of the patient is demanded at the end of four months. The Official Medical Investigator of the Queensland Government is reported to have investigated the methods and compared results with other methods. His conclusions were: (1) Infantile Paralysis: All recent cases treated at the Clinic have been totally and permanently cured. All long standing cases have been improved. (2) Cerebral Diplegia: Results were excellent, no other method could approach them.

The author suggests that exercise and hydrotherapy are the basis of treatment of both types of disorders. The general principles of treatment of infantile paralysis are noted as follows. (1) maintenance of a bright mental outlook; (2) maintenance of impulse; (3) hydrotherapy and remedial exercises; (4) maintenance of circulation; (5) avoidance of the generally accepted methods of immobilization.

Unfortunately, the material of the text is arranged rather unconventionally. After a perusal of the book, one is left somewhat bewildered—not wholly convinced.

J. C. MICHAEL, M.D.

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HYPERTENSIVE HEART DISEASE—ITS CLINICAL-PATHOLOGICAL MANIFESTATIONS*

FRANCIS D. MURPHY, M.D., ROBERT M. WOODS, M.D., and JOHN GRILL, M.D.

Milwaukee, Wisconsin

THE term hypertensive heart disease occupies a unique position in the modern classification of diseases of the heart. Although it is by far the commonest type of heart disease it is the least understood of any. It has been recognized ever since Bright,⁶ in one of his original papers, pointed out that cardiac hypertrophy played a part along with kidney sclerosis and hypertension in Bright's disease. Yet the true significance of this cardiac hypertrophy has only recently begun to be recognized. Perhaps the term may be looked upon only as a new name for an old condition, but it is more than that. This name places the emphasis upon the features of the disease that should be emphasized, and introduces a new point of view in the interpretation of the clinical features. It tends to identify a kind of heart disease that has lacked identification. It is hoped that the natural sequelæ of this correct delineation will be its earlier diagnosis, a better understanding of its course, and more effective methods of treatment.

In former years the close association of cardiac hypertrophy, hypertension, and renal sclerosis led observers to evaluate the symptoms of hypertensive heart disease in terms of renal insufficiency and failure. So well were the lessons of kidney pathology learned that for over three-quarters of a century after Bright the hypertrophic heart and its behavior were overshadowed by the study of the shrunken, contracted, sclerotic kidney. Albuminuria, hyper-

tension, and cardiac enlargement came to be looked upon as satisfactory evidence for a diagnosis of chronic interstitial nephritis; and the patient with these symptoms was watched zealously for the oncoming renal failure and uremia which frequently never occurred.

Hypertensive heart disease differs from other cardiac disorders in that several etiological factors are closely interwoven in its development. While it is true that it is the result of the combined action of hypertension and arteriosclerosis, it is not a disease which lacks unity. The distinctive pathological lesions in addition to the characteristic symptoms and clinical course are sufficient for classing it as a separate form of heart disease. The modern concept of hypertensive heart disease, then, may be given as follows:

The heart, which has been overstrained by persistent arterial hypertension, hypertrophies, becomes impoverished by lack of proper nutrition due to coronary arteriosclerosis, and fails as a result of a combination of these two forces.

The upward trend in the mortality rate from heart disease in general has attracted widespread attention in the profession and among the laity. Explanations given by the Bolduans,⁵ Cohn,¹⁰ Hedley,²¹ Dublin and Armstrong,¹² and others¹³ imply that the great increase in the mortality rate in heart disease is more apparent than real. In spite of this, the problem of the management of the individual patients is not minimized. Undoubtedly in modern times more people grow older because diseases such as tuberculosis, diabetes, typhoid fever, and the infectious diseases have been better controlled. As a result people live to middle age or older into the period

* From the Department of Medicine, Marquette University, and the Department of Medicine, Milwaukee County Hospital. Presented at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 4, 1937.

TABLE I. DISTRIBUTION OF DEATHS IN THE UNITED STATES IN 1930, 1932, AND 1933
ACCORDING TO ABRIDGED INTERNATIONAL LISTS OF CAUSES OF DEATH

Cause of Death	Number			Rate per 100,000 estimated population			Per Cent		
	1933	1932	1930	1933	1932	1930	1933	1932	1930
Diseases of the heart...	286,360	268,696	253,084	227.8	223.7	213.5	21.3	20.5	18.8
Cancer and malignant tumors.....	128,479	122,739	115,265	102.2	102.2	97.2	9.6	9.4	8.6
Nephritis.....	104,264	104,571	107,619	83.0	87.2	90.8	7.8	8.0	8.0
Violent and accidental (except homicide and suicide).....	91,087	85,868	95,527	72.5	71.5	80.6	6.8	6.6	7.1
Pneumonia.....	86,949	92,474	98,657	69.6	77.0	83.2	6.5	7.1	7.3
Tuberculosis of the respiratory system.	67,422	67,789	75,120	53.6	56.4	63.4	5.0	5.2	5.6

of life when heart disease due to degenerative changes becomes more frequent. The importance of heart disease in mortality rate is nowhere better shown than in the United States Department of Commerce, Bureau of Census, Mortality Statistics.⁴⁴ Here it is seen that in the year 1933, there were 286,360 deaths due to diseases of the heart, as compared to 128,479 due to cancer and malignant tumors and 86,949 to pneumonia (Table I). When we turn, however, to vital statistics in order to find how common hypertensive heart disease is we are keenly disappointed. Inaccurate, misleading, and obsolete diagnostic terms are, to some extent at least, responsible for the lack of identification of hypertensive heart disease. The apparent unimportance of hypertensive heart disease shown in vital statistics is misleading. Cabot⁷ states that it is commoner than any other type of cardiac malady and is more common than all other forms of heart disease put together. Hedley²⁰ reports that 61.4 per cent of the total cardiac deaths in Washington, D. C., during 1932, were due to arterial hypertension and arteriosclerosis.

Confusion Due to the Inaccurate Use of Terms

Terminology and classifications have considerable influence over our ideas of the nature of diseases. Precise terms reflect our understanding of disease and from time to time should be modified to show our changing concepts. The accurate use of medical terms and clear-cut classifications become valuable aids in the understanding of diseases while inaccurate and uncertain use of them is misleading and tends to cause confusion. A lack of understanding of the true nature of hypertensive heart disease may to no

small degree be attributed to a confusion in names. This common heart condition in which the kidneys, arteries, and heart may all contribute to the clinical picture has been given a variety of names. Frequently the term implied that the kidney damage was the important phase, as when such a term as "chronic interstitial nephritis" was used to identify the disease. Others saw the arteriosclerosis of the coronaries as the chief disorder and applied the term "arteriosclerotic heart disease." A source of vagueness was occasioned by the introduction of terms to depict the fibrous tissue growth in the myocardium. "Arteriosclerotic heart disease," "myofibrosis," "fibroid disease of the heart," "fibrous myocarditis," and "chronic myocarditis" were used to designate this condition. The term chronic myocarditis, introduced by Weigert,⁴⁵ has been the one most extensively used and is the most misleading. This diagnosis often covers up lack of understanding of the genuine nature of the disease. It is a diagnostic term of convenience. Its use should be restricted to designate genuine chronic myocarditis. As Willius⁴⁸ points out, in the majority of instances in which a diagnosis of chronic myocarditis is rendered, the patient has either coronary sclerosis or hypertensive heart disease or both. In reality, he points out, infection and inflammation have no part whatsoever in the resulting phenomena.

Histological examination of the heart muscle led to an erroneous interpretation of the fibrous tissue present. The patchy fibrosis and the cellular infiltration may be explained as the result of occlusion of branches of the coronary arteries. Genuine chronic myocarditis may follow certain infectious diseases such as diphtheria,

rheumatic fever and others, but this term has come into general use as a description for the form of heart disease that occurs with hypertension and coronary arteriosclerosis. Not only has this term been used to identify the pathological lesions of different pathogenesis but it has been applied to designate clinical myocardial failure as well. Pardonable confusion has been added by the fact that hypertensive patients are frequently seen by the physician after heart failure has become established and the blood pressure has fallen to almost normal levels. A post mortem examination reveals advanced coronary sclerosis, a hypertrophic heart, and renal arteriosclerosis. These pathological lesions are the identification marks of a former persistent hypertension. Chronic myocarditis, then, is a rare disease, but the name is one that is erroneously applied with great frequency to the hypertrophic heart.

Dilatation and hypertrophy of the left ventricle in cases of hypertensive heart disease lead at times to stretching of the mitral ring and this is diagnosed clinically by a soft systolic mitral murmur. Mitral insufficiency is the diagnosis sometimes used for such cases, but this is wrong. Genuine mitral insufficiency is not present in the sense that there is organic valvular disease, but it is so-called relative mitral insufficiency.

Although various authors had recognized the importance of cardiac hypertrophy and failure as a sequel to hypertension in Bright's disease it was Janeway²⁸ who first clearly identified this condition. From an analysis of 458 cases of hypertension he stated that in the largest group the clinical picture was that of some degree of cardiac insufficiency and that the patients most often died of cardiac failure. He designated these cases as "hypertensive cardiovascular disease" because the most prominent symptoms associated with the high blood pressure were cardiac rather than renal. More recently Fahr¹⁴ has aided in the proper delineation of this disease and has popularized the term "hypertensive heart disease."

Hypertension, Cardiac Hypertrophy and Coronary Sclerosis

Hypertension.—Usually the hypertension itself in the syndrome of hypertensive heart disease is looked upon as the most important feature. Notwithstanding the fact that the hyper-

tension is an important factor in the bringing on of cardiac dilatation and hypertrophy it is widely acknowledged that the hypertension is not the only element in the production of heart failure. The arteriosclerosis which goes hand in hand with hypertension is recognized more and more as an important component in this disease. The respective parts played by these two disorders have not been clearly defined as yet. Fahr¹⁴ believes that the term hypertensive heart disease should connote both conditions.

Certain impressions in regard to the etiology of hypertension have emerged from clinical and experimental investigation during recent years. Earlier writers (Bright,⁶ Traube⁴² and Johnson²⁹) believed that hypertension and cardiac hypertrophy were the direct outcome of renal disease. Later on Gull and Sutton,¹⁸ Huchard,²⁷ Mahomed,³³ and Allbutt¹ were pioneers in placing emphasis on the dissociation of hypertension and cardiac hypertrophy from renal sclerosis. Following the widespread use of the sphygmomanometer in medicine, hypertension was diagnosed much earlier than previously and the relationship between the hypertension, renal disease and cardiac hypertrophy took on a different aspect. The prominence of symptoms relative to the heart became more widely recognized, and as a sequel to this there was a gradual but determined shift of emphasis from the renal complications of hypertension to the cardiac manifestations. Janeway²⁸ observed that gradual heart failure occurred in 50 per cent of hypertensive patients, and therefore the safeguarding of the heart is the main therapeutic indication.

It is generally accepted that in hypertension there is an increase of peripheral resistance, but the cause of this is not so widely agreed upon. The former theory was that arteriosclerosis, a well recognized organic change in the peripheral arteries and arterioles, was the cause. Now it is believed that a vasoconstriction exists and that the real cause of hypertension is a functional rather than an organic change in the vascular system. Recently Prinzmetal and Wilson,³⁷ after a series of blood flow experiments, concluded that a vascular hypertonus exists independent of the vasomotor nerves and that this intrinsic vascular hypertonus is widely spread throughout the vascular system. They believe that the vasomotor activity which is present is merely an im-

posed factor and not the chief one in causing hypertension. Pickering,³⁶ too, has come to substantially the same conclusion after conducting almost identical experiments.

Following experimental work on dogs, Goldblatt, Gross and Hanzal¹⁷ produced evidence which tends to confute the theory that splanchnic nerve efferent impulses exert a significant control on the vasomotor mechanism and that their removal does not permanently reduce hypertension. They excised bilaterally the entire thoracic portion of the splanchnic nerve and the lower four dorsal sympathetic ganglia. This operation failed to prevent the development of hypertension following the partial clamping of the renal arteries. In another set of experiments they found that splanchnicectomy failed to lower the blood pressure permanently after it had been persistent for about four years following the clamping of the renal arteries. Without controverting the clinical reports of the beneficial effects of splanchnicectomy they do not believe such operations are justifiable in the treatment of hypertension.

One is led to believe from the vast amount of experimental and clinical work done that in hypertension there is an intrinsic disorder of the vascular tissue and that these very early so-called functional changes are not detectable by microscopic examination. The conclusions reached by experimenters in the field of hypertension substantiate in a way impressions held by numerous clinicians for a long time, that in hypertension there is fundamentally an intrinsic disorder of the muscle and elastic tissues of the arteries which is primarily responsible for the hypertension. Undoubtedly the sympathetic nervous influence plays a part, but most authorities agree that it is a minor factor.

Many things have been considered as possible etiological agents in hypertension. It has become almost traditional to attribute this disorder to some fault in our modern mode of living. Tea, coffee, alcohol, meat, and tobacco have from time to time been accused of being instrumental in its production, and some have called the pace of modern life an important etiological factor. The influence of such things in the etiology of arteriosclerosis and hypertension is questionable when one considers the paleopathological studies of Marc Armand Ruffer,³⁸ who says that the cause of arteriosclerosis three thousand years

ago is as obscure as it is in modern people. Tobacco can be eliminated because this drug was not used in ancient Egypt. Alcohol played a part in the Egyptian social life. Beer was common and wine was made and imported into the country, but Ruffer believes that the Egyptians were not a race of drunkards. His experiences during the Mussulman pilgrimage are also interesting. At that time he made over 800 post mortem examinations of these people who had never touched alcohol and found that diseases of the arteries were as common as in people who take alcohol regularly. Furthermore, he believes that the theory of the wear and tear of modern life is a myth, the fact being that our life is easier and that we work less than did our ancestors. One may assume, then, that arteriosclerosis, which may be looked on as the tombstone of hypertension, was as prevalent three thousand years ago as it is today and that its etiology was just as obscure.

From the vast amount of experimental work, statistical and clinical studies, one observes that there are many possible factors that may play a part in the etiology of hypertension and arteriosclerosis. Furthermore, this lack of exact knowledge concerning hypertension must not be taken to mean that nothing is known about this condition. From the practical aspect much important and desirable information has been accumulated from years of clinical study. As an example it has been found that in the etiology there are two uniform and constant elements which are of outstanding importance, the familial tendency and the age factor.

Cardiac Hypertrophy.—An enlarged heart is a diseased one that tends to fail. When the muscle of the left ventricle is subjected to persistent strain, as occurs in chronic hypertension, dilatation and hypertrophy take place. Both are responses of heart muscle fibers to increased work. The exact cause of hypertrophy of the individual muscle fiber is unknown. In the absence of valvular heart disease or pericardial adhesions an enlarged hypertrophic heart may be looked upon as evidence that hypertension is present or has been in the past. Under the strain the muscle fiber elongates, resulting in cardiac dilatation. This in turn leads to a thickening of the fiber in order to restore the length-breadth ratio that prevailed in normal conditions. Christian⁸ and others contend that cardiac dilata-

ion and hypertrophy are not advantageous compensatory changes but are for the most part a sign of intrinsic muscle fiber weakness; they hold that such changes are not normal responses to effort and are always undesirable effects.

Many authorities agree that hypertension is the most important factor in the production of cardiac hypertrophy and that prolonged muscular exertion produces muscle hypertrophy. Since the left ventricle is called upon to perform more work in chronic hypertension, hypertrophy of that chamber is not to be wondered at. Deutch and Kauf¹¹ and Herxheimer²⁴ have shown that strenuous exercise produces genuine hypertrophy of the heart. Tung and his associates⁴³ in a study of a number of ricksha pullers, found that twenty-one or 45 per cent of forty-six pullers showed definite cardiac enlargement, and concluded that chronic exertion may cause hypertrophy which is considered to be a physiological response but is no indication of disease. Studies in the physiology of exercise of growing dogs were made by Steinhaus, Hoyt, and Rice.⁴⁰ They concluded that a work hypertrophy in the heart is produced by exercise such as swimming and running. The right and left ventricles both are involved with excessive hypertrophy in favor of the left heart. It is easy to visualize that the left ventricular chamber bears the brunt of the load in hypertension and is more apt to fail than the right chamber.

In a study of myocardial changes in hypertension, Levine³¹ examined twenty-seven hearts. Six had marked sclerosis of the large coronaries, six had sclerosis of the arterioles, eleven had marked organic changes in the arterial tree, and sixteen had changes too slight to have seriously interfered with the blood supply. In all cases there were myocardial scars, but the scarring was more marked in the hearts with more advanced arteriosclerosis. He states that in hypertension there is cardiac hypertrophy, but agreement has not been reached as to what other changes may develop. As Levine points out, coronary sclerosis in some hypertensive hearts seems sufficient to explain the myocardial damage, while in others it does not, and therefore some other explanation for these changes must be given. He believes that there is a functional spasm of the terminal arterioles followed by changes which finally lead to scarring. The anatomical changes in the myocardium and myo-

cardial failure resulting from hypertension were studied by Clawson.⁹ He points out that myocardial fibrosis and coronary sclerosis are the chief changes. Myocardial strain, he emphasizes, is not a cause of myocardial fibrosis, and many cases of myocardial failure show no changes in the heart muscle.

Aside from valvular heart disease, pericarditis, and hypertension there are occasional instances of so-called idiopathic cardiac hypertrophy. If hypertensive heart disease and failure could be explained by assuming that the increased burden of hypertension was the cause, and cardiac dilatation and hypertrophy the result, the matter would be greatly simplified, but this problem is much more intricate. There is a hypertrophic heart to which is added fibrosis and coronary arteriosclerosis. As most observers are unwilling to believe that work hypertrophy is a cause of subsequent failure other explanations must be sought. The cardiac hypertrophy may be looked on then as a cardinal sign of hypertension. The hypertensive heart may be taken to mean a hypertrophied heart and often an incompetent one without pericarditis or valvular lesion.

Coronary Sclerosis.—Hypertensive heart disease may last for years without causing any discomfort or leading to limitation of the patient's activity. Frequently this condition is discovered on a life insurance examination or some other routine. Just why the hypertensive heart fails is not exactly known, but it is believed that at least three factors contribute to this failure: (a) the hypertension itself with its persistent burden upon the left ventricle, (b) the impoverishment of the heart muscle, which is due to coronary arteriosclerosis with partial occlusion, (c) reduced oxygen diffusion of the heart muscle fibers due to thickness of the heart wall. Fahr's¹⁵ observations led him to believe that coronary sclerosis is found in 90 per cent of all patients dying with hypertension, and Bell³ found 75 per cent of cases of coronary sclerosis associated with hypertension. Averbuck,² too, emphasized that heart failure in hypertension is most commonly associated with coronary sclerosis and thrombosis. In his series of forty cases he found 34, or 85 per cent, in the cardiac group had significant coronary arterial involvement, whereas only three, or 10 per cent, of the cases of the control group had significant artery changes. Yet there

were six, or 15 per cent, of the forty cases in which no such organic changes in either the coronary arteries or heart muscle were present to account for the cardiac failure.

Levine³⁰ points out that the exact rôle of hypertension in hypertensive heart disease is not clear. There is a group of cases having hypertension and angina, he states, in which the blood pressure falls after an attack of coronary disease. Neither the intensity nor the duration of hypertension can entirely account for the development of heart failure. The coronary arteries seem to be the determining factor in many cases, but there are instances in which the gross appearance of the coronaries is normal and yet the heart fails. In a series of one hundred cases studied clinically and post mortem, Scott³⁹ found that myocardial failure was the cause of death in 68 per cent of them. Coronary sclerosis, he states, occurred frequently, but he gives no exact figures.

Of 155 hypertensive patients studied by Nuzum and his associates,³⁵ there was clinically detectable coronary arteriosclerosis in 44.5 per cent of the cases. Sixty-five patients came to autopsy and a clinical diagnosis of coronary sclerosis was confirmed in 97 per cent.

Lisa³² observed advanced changes in the heart wall in all of a series of ten cases of hypertensive heart disease with failure. Marked hypertrophy was an outstanding feature. Many microscopic necrotic foci associated with fragmentations and areas of wavy fibrillæ resembling acute myocarditis were found in the heart wall. He does not mention the condition of the coronary arteries.

So close is the relationship between the hypertension and coronary arteriosclerosis that Fahr¹⁵ believes we should consider them together, and that the term "hypertensive heart disease" should connote coronary involvement. In a series of 375 cases of essential hypertension reported by my associates and myself³⁴ in 1932, it was found that in those cases of long duration the heart weights were greater and the coronary sclerosis was more marked. There was, however, no exact correspondence between the degree of coronary disease, fibrosis, and the cardiac enlargement. Of 171 hearts (group two of that series) forty-four, or 25.7 per cent, had coronary disease of sufficient extent that the throm-

bosis or pronounced arteriosclerosis was seen macroscopically. As pointed out at that time a more searching examination for sclerosis of the smaller vessels would undoubtedly show much greater incidence.

The relative importance of the high blood pressure and the coronary sclerosis in producing heart disease and failure is difficult to determine. In the past, patients with this type of heart disease came for medical advice after the heart had commenced to show evidence of failure. The blood pressure in these later stages may not reflect the genuine importance of the hypertension, for frequently after the onset of failure the blood pressure falls much below its previous level. It is quite certain from clinical and pathological investigations, however, that very few patients develop a heart failure from the excessive burden of hypertension alone. If pronounced arteriosclerosis develops, heart failure is apt to come at a much earlier date.

Some Phases of Heart Failure

Every patient with persistent hypertension is a candidate for hypertensive heart disease. This does not mean that every hypertensive develops heart failure, but in practically all cases the heart is enlarged. Renal failure, apoplexy, and diseases unrelated to the circulatory system account for the deaths in some of these patients, but sufficient evidence is at hand to state confidently that in more than half of the cases of hypertension, cardiac failure is the main cause of death. Herxheimer and Schulz²⁵ studied 394 cases of essential hypertension at autopsy and found 384 of them, or 97.5 per cent, had cardiac hypertrophy. Of 420 cases studied by Bell and Clawson,⁴ 187, or 44.5 per cent, had heart failure. If they had included the coronary group, 254, or 60.4 per cent, were due to this cause. Fahr¹⁵ states that at least 55 per cent of the patients with high blood pressure die of heart failure. Sixty or 70 per cent of the individuals with so-called essential hypertension are destined to develop myocardial insufficiency and die of heart failure. In an analysis of 375 autopsied cases of essential hypertension, my associates and I³⁴ found that 188, or 50 per cent, died of heart disease, 10.4 per cent of renal failure, 13.4 per cent of apoplexy, 14.2 per cent of infections and 12 per cent of miscellaneous causes. In another se-

ries of 370 cases studied at autopsy, we have found the following statistics: heart disease 54.32 per cent, renal insufficiency 9.48 per cent, apoplexy 14.05 per cent, infections 11.35 per cent, malignant tumors 6.21 per cent, miscellaneous 4.59 per cent (Table II).

From these and innumerable other reports it may be concluded that cardiac hypertrophy rarely occurs in the absence of chronic valvular disease or chronic pericarditis unless chronic hypertension is present to account for it. It must be borne in mind, however, that when a patient has an enlarged heart without pericardial disease or valvular defect, hypertension, too, may be absent at the time of examination. It is astounding how often it may be shown that patients have had hypertension in the past and yet never were aware of its significance. Frequently they seek medical advice after evidences of coronary occlusion have developed and have practically overshadowed the earlier symptoms of hypertensive heart disease.

The additional burden imposed upon the heart by chronic hypertension usually is carried without any distress for many years. The cardiac dilatation and hypertrophy may be looked upon as compensatory changes and for a variable period of time may be the only evidences that the heart is overburdened; yet, sooner or later, for reasons not wholly understood, the hypertensive heart muscle begins to fatigue and finally fails. As hypertension and arteriosclerosis are changes that tend to develop after the age of forty years, the heart is placed under an unusual strain at a time when, due to natural processes, its strength is declining. Then, too, as the disease progresses there is a tendency for the fixation of the diastolic phase at a higher level, which increases the work of the heart. In addition, the arteriosclerosis which has been advancing hand in hand with the hypertension all these years involves the coronary arteries, which lose their elasticity, resiliency, and their ability to dilate when called upon to do so. Therefore, the muscle fibers of the heart suffer from lack of oxygen and proper nourishment and begin to show signs of degeneration. Thus the hypertensive patient whose heart has become gradually more embarrassed slowly but surely begins to show signs of cardiac fatigue. In the early phases of the disease, when hypertension and cardiac hypertrophy alone are

TABLE II. THE CAUSE OF DEATH AS SHOWN AT AUTOPSY IN 370 CASES OF HYPERTENSIVE HEART DISEASE

Cause of Death	Number	Per Cent of Total
Heart Disease.....	201	54.32
Apoplexy.....	52	14.05
Renal insufficiency (uremia).....	35	9.48
Infections.....	42	11.35
Malignant tumors.....	23	6.21
Miscellaneous.....	17	4.59
Total.....	370	100.00

the clinical features, the patient usually fails to realize the true significance of his position. He does not understand that he is on the route which in most cases terminates in heart failure. Occasionally after a short period of overexertion, an episode of dissipation, an emotional upset, or an attack of influenza he suddenly realizes that the heart has been overtaxed. For the first time in the long course of events he becomes aware of an uncomfortable sensation which marks the beginning of the downward trend of the heart's reserve force.

Various explanations have been advanced for the tendency of the hypertrophic heart to fail. Harrison¹⁹ offers an explanation which concerns the rate of oxygen diffusion in the muscle fibers. He considers that the oxygen tension of the arterial blood is insufficient to cause oxygenation of the thickest fibers seen in the thickened heart in the time available during diastole. As he points out, the blood remains in the cardiac capillaries for only a fraction of a second and oxygen diffusion does not occur instantly but requires a definite interval of time. It would appear that a rapid heart rate or too great increase in the distance to which oxygen must diffuse might interfere with complete oxygenation of the central portions of muscle fibers and hence with the recovery process. He further points out that this is why small animals with thin cardiac muscle fibers may have a normal heart rate of three hundred or more and yet not suffer from heart failure.

In recent years there have been attempts to explain the failing heart in hypertension on a chemical basis. Herrmann and his associates^{22,23} believe that low myocardial creatine values are more or less constant accompaniments of congestive heart failure and must be among the sig-

TABLE III. THE TYPE OF FAILURE AT THE ONSET OF MYOCARDIAL INSUFFICIENCY IN 269 CASES OF HYPERTENSIVE HEART DISEASE

Type of Heart Disease	Number	Percentage of Total
Right.....	8	2.97
Left.....	131	48.70
Total.....	110	40.89
Undetermined.....	20	7.44
Total	269	100.00

nificant chemical changes that are associated with myocardial damage and insufficiency. It is pointed out that these low creatine values are probably the result of an insufficient supply of oxygen to the fibers of the heart muscle. After all, no one is able at present to show by study of the heart muscle after death just why it has failed. Recent advances, however, seem to be steps forward in this direction.

The kind of heart failure that occurs in hypertensive heart disease is usually easily recognized. Since the brunt of the added burden is thrown upon the left ventricle, this chamber dilates and hypertrophies. Failure is usually of the left ventricular variety, which is distinguished chiefly by dyspnea, often paroxysmal and usually nocturnal, substernal distress, palpitation of the heart, and cough associated with mild congestion in the bases of the lungs. This type of heart failure is looked upon as the ultimate result of aortic regurgitation and of hypertension. Occasionally so-called right ventricular failure is the earliest manifestation of the failing heart in hypertension. In this form of failure there is edema of the legs, ascites, effusions into the pleural and pericardial sacs, engorgement of the liver, turgescence of the veins of the neck, and cyanosis. Right failure is more apt to be the initial clinical syndrome in cases of mitral stenosis and pulmonary sclerosis. In a later phase, after left ventricular failure has become well established and is resistant to treatment, the right heart may fail too. Total heart failure may then be said to be present. The term congestive heart failure is used to identify either right or left ventricular or total failure.

As Harrison¹⁹ concludes, dilatation and hypertrophy primarily involve only one ventricle of the heart to any marked degree, but ordinarily the other ventricle is affected to some extent even in the beginning. More recently Thompson and

White⁴¹ point out that hypertrophy of the right ventricle is often found in persons with pure left sided strain regardless of the presence or absence of left ventricular failure, but if there is failure the degree of hypertrophy is increased. Occasionally left ventricular hypertrophy and failure may be present with no hypertrophy of the right ventricle. In 269 cases of this series of hypertensive heart disease there was an early right ventricular failure in eight cases, left ventricular failure in 131 cases, total failure in 110 cases, and the type of onset was undetermined in twenty cases (Table III).

Most observers are fully aware of the fact that the chief underlying cause of heart failure, the arteriosclerosis and the hypertension, can be influenced only indirectly. Yet more frequently than is usually thought, the actual attack of heart failure is precipitated by some extra-cardial condition. Cough, associated with upper respiratory infection, seems particularly likely to precipitate an attack of failure. Although I am not able to give exact statistics from my own cases, it is certain that such precipitating factors are very common, and, furthermore, that frank heart failure may be retarded or forestalled for some time by the adequate control of extra-cardiac precipitating influences. The first sign of heart failure in hypertension may be a severe attack of acute pulmonary edema, angina pectoris, or even sudden death, but in most cases the onset is insidious and is characterized by the classical features of left ventricular failure.

Overtaxing of the left ventricle in high blood pressure leads to dilatation of that chamber and certain evidences of respiratory embarrassment occur. Orthopnea and paroxysmal attacks of nocturnal dyspnea, often called cardiac asthma, are the early symptoms. These symptoms have been variously explained, but now it is generally agreed that they are the sequelæ of pulmonary congestion resulting from the back pressure effect of left ventricular failure. Such congestion in the lesser circulation may be very mild and difficult to elicit, or it may be so definite that the classical picture of acute pulmonary edema develops with the coughing of frothy pink material, pronounced respiratory embarrassment, and signs of waterlogged lungs. The direct results of these changes in the pulmonary circulation are a diminution in vital capacity of the lung and an

increase in the respiration rate. The various forms of respiratory difficulties may be attributed to the combined effect of these two factors. The discussion of the clinical features of left ventricular failure must take into account two stages of the syndrome, the early one, when the patient is usually seen in the office, and the later one, when he is examined in the hospital or in bed at home. In the earlier stages the patient may be hardly aware that anything is wrong with him. There may be a slight cough associated periodically with blood-tinged sputum. At first the short windedness, which later is such a harassing symptom, occurs only at night or on heavy exertion. Almost subconsciously the patient requires an extra pillow at night for a comfortable rest. Such requirements are at first attributed to nervousness, and only later on does the patient realize his predicament. After a number of weeks or months these vague subjective symptoms become more pronounced, and finally the fully developed clinical picture of left ventricular failure is unmistakable. At this time, periods of dyspnea come more frequently and are of greater duration and severity. Yet even then there may be comparative freedom from respiratory distress for days at a time if the patient remains quiet. Slight exertion, emotional strain, or a heavy meal may precipitate the spells of shortness of wind. Most characteristic are the paroxysmal attacks of dyspnea that come on at night. The patient who has been comfortable during the day goes to bed feeling assured of a night free from distress. After a few hours of sleep he is suddenly taken with a sensation of suffocation and great oppression over the heart. He awakens abruptly and is forced to sit up in bed and gasp for air. Frequently, unless the attack is cut short by an injection of morphine, he leaps from bed to an open window in order to overcome the sensation of strangling. Peculiarly enough, after half or three quarters of an hour of distressed breathing, he is often able to lie back in bed and sleep comfortably for the rest of the night. In the very near future, however, periods of dyspnea, unless retarded with medication, become more and more frequent until finally the patient is never free from the oppressed feeling of suffocation.

Substernal Distress.—As a rule, it is difficult to evaluate the various types of distress in the

chest in patients with heart disease. The fairly constant association of the elevated blood pressure and coronary sclerosis of hypertensive heart disease leads to difficulty in assessing the true part played by either of these factors in the failing heart. From a study of the clinical histories, we agree with Levine⁸¹ and Fahr,¹⁵ who believe both should be considered together.

When a hypertensive individual develops cardiac pain of the anginal variety, one may assume that the coronary phase of the disease has begun to take its toll. In our series, chest pain was the initial symptom in thirty-four, or 12.56 per cent, of 269 cases. Coronary arteriosclerosis was present in 158 of 201 cases studied post mortem, or 78.45 per cent. Coronary thrombosis was found in eighteen, or 8.95 per cent, of these cases. Angina was present in 329, or 26 per cent, of 1,249 cases reported by White⁴⁶ when they were first seen for treatment.

Providing the physician personally makes an accurate analysis of the pain, true angina may be satisfactorily identified, but if he must rely upon records made by various other examiners, the conclusions drawn must necessarily lack precision. The patient frequently finds it difficult to convey his true sensations to the physician, who may fail to interpret his descriptions properly. Tightness, or pressure in the sternal area, a sensation of choking, or a toothache type of pain are expressions commonly used by patients to describe the sensations. Genuine anginal pain usually is felt in the sternal area, but occasionally it occurs over the heart. Sometimes the distress is mistaken for indigestion because of the formation of gas in the stomach. A person who is over forty-five years of age who develops indigestion and gaseous eructation following meals should be examined for cardiac disease. A pain which is paroxysmal in type produced by exertion, emotional strain or heavy eating, and which tends to disappear under the influence of nitroglycerine is most likely angina pectoris. The significance of this type of pain in these cases is difficult to determine. Occasionally angina may be present for a number of years before other serious signs of heart failure. Although it does not mean that heart failure is present, in hypertensive heart disease the two usually go hand in hand. Clinical observations show that the onset of anginal pain in hypertensive heart disease is

usually followed soon by other evidences of heart failure. If the pain occurs after dyspnea has set in there is usually a rapid decline in the cardiac reserve. It is an ominous sign, regardless of the stage of the disease when it is first seen.

Palpitation, Tachycardia, and Cardiac Irregularities.—Heart consciousness is an early and an important symptom in hypertensive heart disease. Frequently before dyspnea, anginal pain, or other evidences of heart failure, the patient has palpitation. A sense of fluttering or hammering of the heart, which may be either rapid or slow, are the descriptions patients often give. The differentiation of palpitation from actual pain in the heart area is not easy to make. This symptom is more confusing than others because it often occurs in neurotics with perfectly normal hearts; yet I wish to emphasize that the onset of palpitation in a patient with hypertension is a symptom that must be examined carefully. With what frequency palpitation is a feature of the clinical picture of hypertensive heart disease may be estimated from statistical reports. Our own records show palpitation to be the presenting symptom in thirteen of 201 cases, or 4.83 per cent.

Tachycardia often develops in the presence of a hypertrophic heart and usually brings on premature failure. During diastole the left ventricle receives its blood supply and an increase of cardiac rate interferes with the oxygenation of the heart muscle fibers. As stated by Williamson⁴⁷ there is no worse associate for a weakened pericardium than tachycardia. Not only does it goad the weak muscle to more frequent contractions, but it deprives the harassed myocardium of adequate nourishment.

The significance and frequency of auricular fibrillation in hypertensive heart disease has recently been studied by Flaxman.¹⁶ In his series, 158, or 25.3 per cent, of 623 patients had auricular fibrillation. In White's⁴⁶ group of 1,249 hypertensive cases auricular fibrillation occurred in 170, or 13.6 per cent, of them. In our own series, auricular fibrillation was an early sign of heart disease in thirty-four of 120 cases, or 12.63 per cent. When auricular fibrillation occurs earlier in the course of hypertensive heart disease than other signs of heart failure, it is usually followed by other evidences of congestive failure within a short time. This leads one to believe that Fahr¹⁵

is correct in his opinion that auricular fibrillation may be responsible for the onset of heart failure which otherwise would have been deferred for some time to come. There can be little doubt that the onset of auricular fibrillation renders an already embarrassed heart more ineffective and serves to mark the beginning of cardiac defeat.

Auscultation of the hypertrophic heart often reveals gallop rhythm. The appearance of this triple rhythm, or reduplication of the first sound, in association with cardiac enlargement and hypertension, is an ominous sign which usually indicates that frank heart failure is not far off. It usually occurs at the time when the hypertensive heart commences to show dilatation. A systolic mitral murmur occasionally makes its appearance coincidental with the development of gallop rhythm. With proper management, the gallop rhythm may be controlled for weeks or even months, but it reappears after the heart muscle has become more exhausted. This arrhythmia is one of the surest signs that the overburdened heart muscle is exhausted, and it occurs in the closing period of hypertensive heart disease. Gallop rhythm is never heard in association with auricular fibrillation, but at times it is displaced by it.

Electrocardiographic studies in hypertensive heart disease reveal no clear-cut results. The left ventricle preponderance or left axis deviation is the result of cardiac enlargement of the left ventricle. Bundle branch block indicated by a prolongation of the QRS complex is usually associated with the miliary scarring of the heart muscle. Decided changes in the T waves are usually manifestations of coronary occlusion or coronary infarction. It may be concluded from reports that in certain cases following splanchnicectomy inverted T waves become upright again that these abnormalities may not depend upon such organic changes.

Prognosis

How long a patient with hypertensive heart disease may live before the onset of cardiac insufficiency has not been determined, but as a rule, once the heart has failed, there is little likelihood of its regaining its former reserve force. The general opinion is that hypertension usually exists from ten to fifteen years before the heart

ails, although there is considerable variability. It is difficult to foretell how long the heart muscle will be able to stand the added burden because frequently the time of onset of hypertension cannot be determined. When confronted with a hypertensive patient, it is desirable to determine how long he will live before the hypertrophic heart begins to fail. Without an attempt at accuracy there are several measures to be used in approximating this information. As a rule, a diastolic pressure of 120 to 140 connotes a worse outlook than the lower ones (90 to 120). The greater the cardiac enlargement, the sooner heart failure sets in. Progressive enlargement of the heart is a poor prognostic omen. The degree of arteriosclerotic change seen with the ophthalmoscope is helpful in prognosis. Retinopathy with edema of the discs is a grave sign, but without choked discs it is not so serious. Electrocardiographic examinations may show the presence of bundle branch block or inversions of the T waves in Leads one and two or prolongation of the Q wave in Lead three. These abnormal configurations are not incompatible with longevity and may be present for years before cardiac failure develops. In the hypertensive hypertrophic heart, as in other types of heart disease, there is no accurate method of determining the amount of reserve force the heart muscle has. Before certain signs and symptoms indicate that cardiac strength is failing, we do not know how long the heart muscle can withstand the extra load of hypertension. The kind of work the patient does, the type of treatment he receives, as well as the intrinsic qualities of the heart muscle, all play a part in prognosis.

The duration of life following the onset of cardiac symptoms is a subject of considerable interest and also of great variation. In a clinical analysis of our cases it was found, as shown in Table IV, that ninety-six, or 35.6 per cent, of the total number of patients lived from one to five years after the first signs of heart failure set in. Ninety, or 33.4 per cent, of them lived less than six months. Twenty-seven, or ten per cent, lived from five to ten years. Only two, or 0.74 per cent, lived ten years or longer after the first sign of failure. The unusually high mortality rate in the first year following the onset of cardiac symptoms may in part be explained by the fact that the patients were of the type seen

TABLE IV. DURATION OF LIFE FOLLOWING ONSET OF CARDIAC SYMPTOMS IN 269 CASES OF HYPERTENSIVE HEART DISEASE

	Number	Percentage of Total
Less than 6 months.....	90	33.45
6 mo. to 1 yr.....	27	10.03
1 yr. to 5 yrs.....	96	35.68
5 yrs. to 10 yrs.....	19	7.06
10 yrs. or over.....	2	0.74
Time of onset unknown.....	35	13.04
Total.....	269	100.00

in charity institutions. Perhaps in private practice, with more careful regulation of the patient's routine, the mortality rate would be much lower. Notwithstanding the circumstances under which the patient is treated, it is undoubtedly true that if anything is to be done in the way of prolonging the life of individuals with hypertensive heart disease, vigorous therapeutic measures must be established before the onset of cardiac breakdown. In consideration of the prognosis, it is important to remember that the hypertensive cardiac is subject to malignancies, acute abdomen, and all the diseases that tend to occur in the individual without hypertensive heart disease.

Finally, clinical observations show that in hypertensive heart disease, as in chronic nephritis, the clinical course is not featured by a steady decline of reserve force. There are periods of remission alternating with relapses which last from a few weeks to several months. During a remission the patient's hopes are buoyed up, and during a relapse he becomes unduly despondent. If these features of the course of the disease are understood by the physician in charge, the prognosis will be made more guardedly and more satisfactorily than otherwise.

Treatment

Every hypertensive must be considered a potential case of heart failure. In hypertensive heart disease there is a lapse of a period of years between the beginning of cardiac enlargement and frank failure. In treatment, then, one must consider the appropriate therapeutic measures to be used in the stage preliminary to frank failure and those to be used after the heart has begun to fail. The hypertensive patient usually feels too well to resort to an exacting medical routine in the early stages of the disease, and frequently

even in the transitional period which occurs between marked cardiac hypertrophy and failure. It is most important in the early stages of the disease to guard the patient's heart against those influences which tend to precipitate genuine heart insufficiency. In spite of the fact that the patient feels comfortable, the physician must bear in mind that the hypertensive with cardiac enlargement is a candidate for heart failure and that in 50 to 60 per cent of the cases this disorder will terminate his life.

Too often the patient in the early stages of hypertensive heart disease is allowed to drift on without taking advantage of measures that may retard the progress of the disease. Frequently, too, the disease has advanced almost to the closing period of its course before the patient seeks medical relief. Vigorous therapeutic measures at this time can only be palliative, and as a rule are incapable of stemming the downward trend of the disease. Periodic health examinations, which have been advocated, are of great help in detecting hypertension in its early stages, and therefore should help prevent the heart failure of later years. Yet this ideal of a periodic examination, with the object of preventing or retarding the degenerative diseases, has not been realized, for too few people take advantage of this type of an examination. It is questionable whether lecturing to the public or campaigning among the laity for more health examinations would be as effective in controlling this disease as placing more emphasis upon it in teaching students, internes, and house physicians. Enlightenment must emerge from a better understanding of the disease by the physician. After he has been fully convinced of the importance of retarding and forestalling the remote sequelæ of this disorder, he will put into practice effectively what is aimed at in all preventive medicine campaigns. It is no exaggeration to say that thousands of patients with hypertensive heart failure are at the close of their life's career and almost at the end of life itself because the importance of hypertension and its effects upon the heart were not appreciated early enough. If we are able to visualize heart failure as an end-result in all the hypertensives that come under our influence, and if, therefore, we treat them accordingly, morbidity and mortality from heart failure is sure to decline.

In the past there were, and there still are prominent clinicians who fail to stress the importance of a benign essential hypertension upon the patient's mind for fear of making him neurotic. One may well neglect the unfavorable effect that is brought about by a few patients becoming heart conscious, if many others are saved from cardiac breakdown. In brief, then, every hypertensive is a potential case of cardiac failure and physicians into whose hands these patients come should be alert to the remote consequences of the disease and should develop that skillfulness and ingenuity which are necessary to impress the patient who is sick and does not realize it with the importance of frequent examinations and the requisites of treatment.

General measures such as rest, relaxation, and more adequate recreation are therapeutic aids often not taken seriously enough. Obesity and overweight should be combated vigorously, for these aggravate an already overburdened myocardium. A diet which keeps the weight under control is adequate for the treatment of the hypertension too. Sedatives are often used and are effective in the control of the hypertension in the early stages.

The successful management of the patient requires more than therapeutics aimed at the hypertension and the heart. In no type of heart disease can the heart be singled out from the remainder of the body and treated alone. The influence of food intake, gastro-intestinal sluggishness, psychic changes, overweight, insomnia, and numerous extra-cardial conditions is of outstanding importance in the course of the disease.

In the early stages, before frank myocardial insufficiency has occurred, specific treatment must be considered. As stated by Christian,⁸ cardiac enlargement is functionally harmful, and intelligent therapeutics will retard it. He recommends the use of digitalis to delay the appearance of heart insufficiency. Doses of 1½ grains twice a day are effective unless some contraindication occurs. This digitalis therapy is continued throughout the life of the patient. Before outspoken evidences of failure, the effect upon the hypertrophic heart of such conditions as upper respiratory infection, overexertion overeating, mental anxiety in precipitating heart failure must be emphasized. It is surprising to find what a large number of patients date the onset

of failure to one of these extra-cardial factors. Coughing, with upper respiratory infections, throws an added burden upon the heart, and this should be controlled whenever possible.

The treatment, after the classical textbook picture of cardiac insufficiency has developed, usually is administered with more rigor and care than that given in the earlier phases of the disease. In this later stage it is difficult for the heart muscle to regain its lost reserve force. Under treatment, however, certain of these patients respond and appear to make complete recovery, but within six weeks to six months the same symptoms of failure reappear. It is desirable to do all in our power to bring about a remission in the course of the disorder. If this attempt is successful, the patient may be symptom-free for a number of months or even years, depending on how carefully therapeutic measures are followed. There is, however, no accurate way of measuring the ability of a heart muscle to regain its lost reserve force. X

Therapeutic aids in this stage may be summarized as follows: (1) prolonged rest in bed; (2) digitalis; (3) diuretics; (4) oxygen; (5) sedatives. Regarding rest, there is no particular rule except that the patient must be kept absolutely in bed for a period of weeks, and preferably months, for clinical experience has shown that prolonged rest is the most important measure in regaining the cardiac reserve. Digitalis is indicated whether arrhythmia is present or not. Even though there is bradycardia, digitalis should be given when the heart is failing. Doses ranging from 3 to 7½ grains a day are indicated. The exact amount of digitalis necessary and the methods of administration are problems that must be decided in each individual case. Sometimes patients tolerate the tablet better than the tincture or capsule, and vice versa. Nausea and vomiting are not always produced by the digitalis, which frequently is blamed for it.

Diuretin, novasurol, and salyrgan are the chief diuretics in use. More recently diuretics such as salyrgan and mercuropurin have been made in suppositories, and this method of administration is often very effective and desirable. A point of practical importance that is doubtless well known, but, I believe, frequently overlooked in the advantageous use of diuretics, is that peripheral edema is not the only indication for the

administration of a diuretic. Frequently this form of therapy makes the patient with no palpable edema, but with dyspnea, pulmonary congestion and cough, more comfortable. Hope,²⁶ over a hundred years ago, had this to say regarding the use of diuretics in the treatment of hypertrophy of the heart: "In addition to purgatives, I have seen the most decided advantages result from diuretics, and not only when there was dropsy but also when there was none." One must remember, too, that albuminuria is not a contraindication for the use of mercurial diuretics in these cases, for their administration is often followed by a disappearance rather than aggravation of this condition.

One of the modern additions to the treatment of heart failure is the widespread use of continuous oxygen inhalations. Patients are made much more comfortable and periods of remission are seen to occur sooner when oxygen is commenced early and continued until the patient is free from the harassing symptoms of dyspnea, orthopnea, and insomnia. Of the three methods of administration, the oxygen chamber, the oxygen tent, and the nasal catheter, the first is undoubtedly the most effective, but the last is the most practical. The oxygen tank with humidifier and nasal catheter can be used whether the patient is at home or in the hospital. Experience with this method of giving oxygen proves that, although it has its drawbacks, it has many advantages and will perhaps be the best method of administering oxygen.

Concerning sedatives, it is important to emphasize that a minimal amount of drug therapy is desirable. Yet at times the dyspneic patient requires a large dose of the most effective of all sedatives, morphine sulfate. Because of its untoward action upon the gastro-intestinal tract and other organs, it should be reduced in amount and discontinued at the earliest possible moment. I have never thought that the danger of morphine addiction is a serious matter in these patients. A substitute for morphine should be introduced after several days of treatment. Such preparations as codein sulfate, amytal, chloral hydrate, and bromides are frequently effective. The sedation is important because it controls insomnia, relieves coughing, and brings about physical and psychic rest to the anxious and fatigued patient.

Summary

1. Hypertensive heart disease occupies a unique position in the classification of heart disorders, for it is not only the most common type of heart disease, but is one of the least understood. Its true significance has only recently been recognized by a few leaders in this field of work. This disorder is not only the most common type of heart disease, but it occurs more frequently than all other forms put together. A review of vital statistics does not properly reflect its importance. Considerable confusion in this regard is undoubtedly due to the lack of appreciation of proper terminology. Obsolete, inaccurate, and vague terms used to designate this type of heart disease have been a stumbling block in its more widespread recognition.

2. Hypertensive heart disease is the result of the combined action of hypertension and arteriosclerosis of the coronary arteries. The heart which has been overstrained by persistent hypertension hypertrophies, becomes impoverished by lack of proper nutrition due to coronary sclerosis, and fails as a result of a combination of these two forces.

3. Hypertensive heart disease is not a disease in the same sense as typhoid and tuberculosis. It is the result of two other conditions, hypertension and arteriosclerosis, and the cause of them is not known. It is almost traditional to hold our modern mode of living responsible for some of these degenerative diseases, yet it does not seem that we work any harder or longer or dissipate to any greater extent than our ancestors. There is proof, too, that these conditions existed in ancient civilizations. It is agreed, however, that there are two prominent factors in the etiology of hypertension and arteriosclerosis, namely hereditary disposition and advancing age.

4. The hopes of those physicians of fifteen years or so ago that periodic health examinations would lead to earlier diagnosis and treatment of these progressive degenerative diseases, have not been realized. Such examinations would be ideal, but too few people take advantage of them. Emphasis on these conditions must emerge from a better understanding of them by physicians themselves. In medical schools and in the hospitals the future practitioners should learn what the remote sequelæ of a benign hypertension are.

Finally, the physician in practice should be encouraged to develop the skillfulness and ingenuity necessary to keep a patient with a mild hypertension, who is neither sick in his own mind nor well in the doctor's, under constant medical supervision for years in an effort to forestall the remote consequences. In this way the progress of hypertensive heart disease will be retarded and the morbidity and mortality rates may be reduced. The fuller realization that every hypertensive is a subject for ultimate heart failure is the key to better safeguarding the heart's health.

5. Of 269 cases studied clinically and at autopsy some degree of coronary sclerosis and myocardial fibrosis was present in 78.45 per cent. The cause of death as determined by autopsy was heart disease in 54.32 per cent of the cases; apoplexy in 14.05 per cent, renal insufficiency in 9.48 per cent, intercurrent infection in 11.35 per cent, malignant tumors in 6.21 per cent, and miscellaneous in 4.59 per cent.

6. In this study it was found that 80 per cent of the patients died within five years of the time of onset. This emphasizes the futility of postponing treatment until frank failure sets in. Every hypertensive must be looked upon as a candidate for ultimate failure, which as a rule occurs within five to fifteen years after the onset of hypertension. In the transitional stage that is the period that elapses between hypertrophy of the heart and heart failure, treatment is most effective.

7. Statistical analysis is made of the chief clinical features and the frequency of their occurrence is discussed.

8. The treatment of hypertensive heart disease is considered according to its two main periods: (a) before the evidence of frank failure sets in, and (b) after myocardial insufficiency occurs. During the earlier period, which may vary from months to years, the main object of treatment is to safeguard the hypertrophic heart from influences which precipitate heart failure and to retard the progress of the disease as effectively as possible. To accomplish this it is desirable to avoid infections, especially of the upper respiratory type, overeating, overweight, overexertion, overwork, and to encourage prolonged periods of relaxation and rest. Digitalis and sedatives judiciously used in conjunction with the other therapeutic measures may be

effective in postponing the final outcome for many years. The treatment of the case after the heart has failed consists of the use of digitalis, diuretics, oxygen, and the other methods usually employed in any case of heart failure.

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HEALTH PROBLEMS FROM THE LAYMAN'S POINT OF VIEW*

C. RUFUS ROREM, Ph.D., C.P.A.

Director, Committee on Hospital Services, American Hospital Association

Chicago, Illinois

Why should a layman discuss solutions to health service problems? First, because the layman receives all the health services; second, because he pays for them. The first fact makes him very much interested in quality. The second makes him very much interested in cost. The layman's specialty in the medical care field is that of payment.

Why do people talk so much about sickness? What are the economic factors which make health service so much different from transactions involving other commodities such as shoes, ships, sealing wax, automobiles, radios, or tobacco?

The Economic Aspects of Health Service

Health services have been regarded from time immemorial as something a person should receive, whether he could pay for them or not. This fact is taken for granted by the general public and the medical profession. In early days when only one kind of medical practitioner was in the field, the public assigned the responsibility for health service to the doctor in some such fashion: "Doctor, you take care of the people and we will take care of you. If you find someone who cannot pay, serve him according to his needs. If you treat someone who can pay you well, collect from him according to his ability."

As a result of this practice, there has developed throughout the medical care field a so-called sliding scale of physicians' fees. The average practitioner has, however, enjoyed merely the privilege of rendering free work and sliding the scale downward. Only rarely, if ever, has he enjoyed the privilege of assessing and collecting high fees from people of ample means.

Health services are compulsory. One does not buy miscellaneous amounts of health services in the way he would buy a theatre ticket, a bunch of roses or even a bottle of patent medicine. To be sure, there are some people who enjoy ill health. But they cannot be regarded as typical

of the average American citizen. Most of us want our medical care for hygienic rather than for esthetic purposes.

Sickness and its cost are unpredictable as to time and amount. No one can tell when he will be sick or what his sickness will cost him. If we knew when we would be sick, we might do something about it, like the man who expressed a wish to know where he was going to die. A friend asked, "Why such morbid curiosity?" The man replied, "I would never go near the place."

If we knew exactly when we were to be ill and what the illness would cost us, we would plan in advance. But sickness does not follow the calendar or respect the pocketbook. It does not wait until the baby is paid for, before bringing a fractured limb to some other member of the family.

Health service is mysterious, an economic commodity of which the buyer is absolutely no judge of quality or need. A patient does not really know either before or after receiving medical care, whether he has been properly served. This responsibility and knowledge rests entirely with the practitioner. Do not misunderstand me. This arrangement is necessary and desirable, in my opinion, and it will be a sorry day when the patient starts diagnosing and treating his own disease. Even a physician does not attempt this absurd procedure. A significant fact, however, is that medical care, being mysterious in nature, represents a type of transaction in which the buyer or the patient is entirely at the mercy of the seller or practitioner. This condition requires a very high standard of ethical policy or procedure, and it is fortunate for us, as laymen, that the ideals of the medical profession have been maintained at such satisfactory levels in most instances, for the physician not only decides whether or not we should receive care, but he has the privilege, unique in the social order, of determining how much the buyer should pay.

Health service is intensely personal. No one knows this better than the patient. It is the only

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type of service for which the patient cannot use a substitute. A busy executive cannot send his assistant manager to the hospital in his place. A solicitous parent cannot take over the sufferings of his child with an infectious disease. There is no substitution in the field of medical care.

The personal nature of health service has two important economic influences. First, the patient feels that no standard of quality can possibly be too high. The best is none too good. This explains why patients are willing to pay large sums for treatment by certain physicians, even though scientific judgment might suggest that adequate care could be obtained from other persons. The second economic influence is the desire of the patient to choose his own physician. Free choice of doctor, particularly for specialized services, is probably of more advantage emotionally than scientifically. Undoubtedly one's family doctor could choose a surgeon more appropriately than a patient could do for himself.

Medical care has no exchange value. Health services cannot be transferred to someone else or returned to the original vendor. A successful surgical operation may restore working capacity which will bring an income of thousands of dollars, yet the former patient cannot exhibit his scar as collateral for a loan at the bank.

The receipt of health services interferes in the short run with the ability to pay for them. Absence from gainful employment coupled with other types of expenses in the home at the time of sickness make health services particularly difficult to purchase.

I have cited the various characteristics which explain why the layman feels the way he does about medical care, namely, that health services are essentially social services, that they are compulsory, are unpredictable as to time and amount, are mysterious, are personal, are of no exchange value, and tend to interfere with the patient's ability to pay for them.

The patient specializes in paying for medical care. This is essentially and uniquely his field, and he should not presume to judge the scientific value of health service, which is a task of the medical practitioner, particularly the physician. The laymen's task is to pay the costs of health service and to pay them under such conditions that the medical profession and other professions can render services of high quality. Conversely,

the primary responsibility of the healing profession is to render good health service and to insist on methods of payment which will not interfere with standards of quality. The layman specializes in payment; the medical profession and the allied groups specialize in the provision of health service.

The Cost of Medical Care

The health problem from the layman's point of view is not to reduce the costs of medical care, but to meet them. Probably the total expenditures for health services should be increased. Approximately 4 per cent of the national income is spent for the prevention and cure of disease, or if we wish to use the metaphor, for the maintenance of the population. Certainly 4 per cent of the national income to insure good health, the very basis of good life, cannot be regarded as too large a total or proportion for this purpose.

Much of the money now being spent for health services is wasted. The expenditures for patent medicines and for non-medical healers alone would suffice to operate all of the general hospitals in the United States, including those conducted by the federal government, state, city and county, as well as the voluntary associations and private hospitals. More than a half billion dollars annually is spent for patent medicines and various types of non-medical healers, much of which, if not actually wasted, certainly is of very little economic or professional value.

If people were as careful about paying medical and hospital bills as paying for radios, automobiles and tobacco, there would be no complaints about the cost of medical care. But "being careful" implies that it is possible to be careful. This requires a special type of budgeting for health services which does not apply to ordinary commodities.

It is impossible for an individual to budget for his medical care, even to plan soundly for the expenses of a childbirth in the family. Suppose, for example, that monthly installments of \$10 are paid into a hospital for the cost of a maternity case. There is nothing to prevent a new expenditure for some other hospitalized illness consuming the entire amount accumulated for the maternity case. Sickness is not like other economic experiences.

Imagine the following fantastic situation. You are in your living room playing the radio. A rap on the door reveals a radio dealer with a new instrument under his arm. The following conversation takes place:

Radio Dealer: "Here is a new radio."

You: "But why do you bring it to me? Is it a present from Uncle Henry?"

Radio Dealer: "No, no . . . I am selling it to you. The price is \$70.20.

You: "Oh, in that case, I don't wish to purchase it."

Radio Dealer: "But you must."

You: "I can't afford it."

Radio Dealer: "I will leave it here and expect you to pay for it immediately or by installments."

The experience just described would not occur in the radio field, but it happens in the field of medical care continuously. The costs are compulsory and unpredictable as to time and amount.

Hospitalized illnesses are particularly difficult to pay for. Not only are they large in total amount, but they are also accompanied by absence from gainful employment. Hospital bills are not too large, considering the value received. One receives more for his money in the average American hospital than in a hotel, but nevertheless, an amount of \$50 or \$150 is difficult to pay under any condition.

How then are people to place hospital care and other expensive illnesses in the family budget if they cannot predict either the amount or the time? The answer is that some procedure must be used to remove the uncertainty and economic hazard of hospitalized illnesses. This can be done by having each individual pay an average amount into a common fund to apply on his own hospital bill, if he requires such care, or upon someone else's hospital bill, who requires it. Approximately 10 per cent of the public require some hospital care each year. The uncertainty can be removed by having everyone pay an equal amount into a common fund for the bills of those who require such care.

Group Hospitalization in the United States

Group budgeting of hospital bills is not merely an idea. It is an accomplished fact at the present time with more than a million subscribers paying amounts ranging from 50 cents to \$1 per

month per individual into a common fund for the payment of their hospital bills.

The Minnesota Hospital Service Association is the second largest plan in the United States with more than 100,000 employed persons and their dependents eligible for hospital service benefits.

It is my responsibility to serve as adviser and counsellor to newly-formed plans in the United States and to attempt to ensure that they are established along lines that are professionally and economically sound. On May 1 there were 350,000 subscribers to the New York City plan, 55,000 in Cleveland, 65,000 in Rochester, New York, and others with smaller enrollment in plans more recently formed.

The American Hospital Association is an association of hospitals. The Association has responded to the general demand by the public for group budgeting of hospital bills by attempting to study and guide the movement. Certain characteristics or criteria have been established which should be present in any plan wishing to serve the community to best advantage. These criteria may be mentioned briefly at this point. They were established in February, 1933.

First, primary emphasis should be placed upon the public welfare rather than upon hospital finance. Group hospitalization is a way by which people pay hospital bills, not a way by which hospitals pay their bills.

Second, the plan should be organized and sponsored on a non-profit basis. No private organizer or promoter should risk his own funds in a project of this type. It should be owned and sponsored by the community and the hospitals which provide this service.

Third, the benefits should be limited to the services provided by the hospitals themselves and not include physicians' or surgeons' services.

Fourth, there should be free choice of hospital by the subscriber at the time of care, and the contract should not interfere with the subscriber's choice of hospital, his relation to his physician, or the physician's relationship to the hospital.

Fifth, the plan should be economically and actuarially sound. Rates should be high enough to provide the services required and to remunerate hospitals adequately for services required.

Sixth, promotion and administration should be

on a dignified basis with the emphasis on group budgeting rather than upon the merits of the participating hospitals.

Group budgeting is, in the final analysis, a form of insurance and is regulated definitely by insurance laws in New York, Illinois, California, Massachusetts, Maryland, Alabama, and Pennsylvania. A number of states such as Minnesota and New Jersey regulate these plans under laws other than those administered by the department of insurance. In every instance, they should receive the benefit of regulation by representatives of the community.

Where plans have been established for the community welfare, they have been successful. No non-profit, free-choice hospital service association has been discontinued, although a number of single hospital plans and those operated for private profit have been unsuccessful to the promoters as well as to the subscribers and the hospitals.

Hospital insurance plans have definitely aided in permitting patients to receive private hospital care whereas, otherwise, they might be forced to use a public tax-supported institution.

Group hospitalization is not a panacea either for the hospital or the subscriber. It is merely one way of budgeting a part of the cost of hospital care. Group hospitalization will not expand to include physicians' services unless the request and demand for such procedure comes directly from the medical profession. There is very little evidence of any such desire at the present time, and neither the hospitals nor the American Hospital Association wishes or intends to sponsor such a development at the present time.

The public owns the hospitals and the public uses the hospitals. If the hospitals are to be adequately supported and the medical practitioners are to be adequately maintained, the public must be prepared to pay more liberally for a good quality of health service. The average incomes of physicians, dentists, and nurses are not, in my opinion, sufficiently high on the average to remunerate these medical practitioners for their services.

It would seem that more adequate payment for health services can be developed through the use of the principle of insurance by the employed population. For the indigent and unemployed,

the use of philanthropy and taxation will have to be continued. Even the money we already spend and will spend in the future could be distributed more wisely to medical practitioners and institutions with resultant savings in health and money through the elimination of the purchase of services from quacks and unqualified practitioners.

Prediction for the Future

The following statements are my opinions as to the way in which the economic aspects of health service will develop during the coming years.

In the first place, I believe that the voluntary budgeting of hospital bills will grow rapidly to include a substantial proportion of the employed population. Low cost hospital insurance plans for people with low and irregular incomes will need to be developed for industrial workers and for rural areas.

Second, it is my opinion that there will be a gradual development of the payment of private practitioners for the care of the indigent, not only in the tax-supported public hospitals, but also in the clinics and wards of voluntary hospitals.

Third, it would seem reasonable to expect a continuation of the present tendency to use tax funds for the care of certain types of expensive illnesses, such as venereal disease, crippled children, cancer and disabling illnesses which involve long periods of treatment and involve heavy expense. There will probably be no reversal in the present trend of caring for nervous and mental and tuberculosis cases from the general tax budget.

The development of health insurance for physicians' services does not appear imminent as far as a national program is concerned, for the following reason. If the physicians are paid for the care of the indigent by the use of government funds, it will remove one of the pressures upon them in establishing charges for pay patients. As far as the general practitioner is concerned, health insurance would be of only limited value, for many patients could pay the small amounts of \$2, \$3 or \$5 per visit. The real difficulties are with the expensive illnesses where charges are from \$50 to \$200. Even this difficulty will be lessened if hospital bills are placed on an in-

insurance program and if the care of the indigent is handled through taxation. The medical specialist will then be able to use the sliding scale in a much more intelligent and satisfactory manner.

Conclusion

The layman's responsibility is that of paying for medical care, not of advising professional groups in the practice of medicine or their attempts to maintain quality. The people want a

good quality of medical service. They are not frightened by the use of the phrase, "state medicine," but they are dreadfully afraid of the phrase, "bad medicine." The primary interest of the professional groups is to concentrate on methods of rendering good service, leaving the methods of payment primarily to the lay public provided such methods do not interfere with the prerogatives which enable a man to practice a high quality of medicine and to conduct himself according to the best professional standard.

VISUAL IMPAIRMENT DUE TO NEGLECT*

FRANK E. BURCH, M.D.
Saint Paul, Minnesota

IN THE time allotted, I shall concentrate upon only a few of the outstanding causes of visual impairment which are preventable.

During the past year at the University of Minnesota we have undertaken a census of the blind of this State. Data have been accumulated from the State Board of Control register for the blind, from records of the State School for the Blind, from the register of the Sight Saving classes in St. Paul, Minneapolis and Duluth, and from other available public and private sources. The work is still incomplete. Sufficient material has been gathered to demonstrate the value of preventive measures. Table I, kindly furnished me by Dr. Charles E. Stanford of the University Staff, shows roughly the etiological grouping. Note that hereditary and inherited anomalies constitute practically one-fourth of all actual blindness.

TABLE I. CLASSIFICATION OF CAUSES OF
BLINDNESS

	Causes	Per Cent
Congenital and hereditary defects . . .	420	24.10
Infectious diseases (local and general) .	319	18.30
Injuries	235	12.80
Glaucoma	159	9.10
Cataracts	157	9.00
Noninfectious systemic diseases	56	3.20
Miscellaneous	265	17.10
Unclassified	112	6.40
Total	1723	100.00

In the juvenile group admitted to the blind school the percentage of blindness from this cause is even higher. This is shown in Table II, which is compiled from statistics furnished by Mr. J. C. Lysen, Superintendent of the Minnesota State School for the Visually Defective.

TABLE II. ADMISSION TO MINNESOTA SCHOOL FOR
THE BLIND, 1926-1936 INCLUSIVE

	Causes	Per Cent
1. Congenital and hereditary, including cataract, congenital glaucoma, albinism, aniridia, colobomata, ectopia lentis, retinitis pigmentosa, defective globes and retinochoroidal pathology	136	38.53
2. Optic atrophy from syphilis, hydrocephalus and various undetermined causes	39	11.05
3. Interstitial keratitis and other luetic causes	38	10.76
4. Injuries	37	10.48
5. Ophthalmia neonatorum	29	8.22
6. Trachoma	2	.56
7. Refractive errors	31	8.78
8. Infectious diseases (measles, etc.) . . .	24	6.80
9. Other causes—unclassified	17	4.82
Total	353	100.00

Each of these tables illustrates the importance of consideration of this first and largest group. Under my personal observation have come many family groups with inherited visual defects. I cite a few specific examples: four families with two or more children blind from congenital glaucoma; six families in which congenital cataracts are common through at least three generations; one family in which four children have gyral

*From the Department of Ophthalmology, Medical School, University of Minnesota. Read before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 3, 1937.

choroiditis with high myopia and defective vision; one with two cases of aniridia; another with three children showing colobomata of the choroid and iris; four families with several members afflicted with albinism; and innumerable family groups, with some offspring developing pigmentary retinal degeneration all of whom will eventually become blind. One family has four children totally or partially blind who have developed retinal detachment following congenital high myopia. I recently reported several family groups with dislocated lenses associated with growth anomalies.³ Every ophthalmologist could record similar observations. In 1,204 families in which hereditary blindness prevailed, Peab found that 60 per cent of the 4,155 children produced had inherited eye defects.² Park Lewis found 2.5 per cent admissions to the New York School for the Blind were offspring of parents both of whom were congenitally blind.

As Berens¹ stated, "Truly hereditary blindness is that which is transmitted through the germ plasma from parent to child.—It is transmissible in the same way that the color of the eyes and the state of the features are transmissible—It is safe to say that parents who are themselves blind from hereditary causes, or who have in either family cases of hereditary blindness, should not risk having children."

There should be more advice and public discussion relative to prevention of blindness through birth control. Sterilization of mothers who have borne two children with extreme eye defects is entirely logical. The comparative hazard of surgical sterilization is no greater than that of parturition. We as physicians have a duty to perform in giving timely advice in the matter of marriage and birth control to parents of blind children and to persons who are themselves blind. The blind themselves should be warned of the danger to their children in case of marriage.

Transmitted syphilis is the cause of approximately 15 per cent of admissions to the blind school. This figure may be eventually reduced by means of public education, general use of free serologic tests, and when improved therapy with heavy metals over a prolonged period is fully utilized. The nation-wide public health activity to eradicate syphilis by making it a purely medical instead of a social problem should and doubtless will reduce the high percentage of visual impairment from optic atrophy, intersti-

tial keratitis and uveitis due to transmitted syphilis. Routine serologic tests during early stage of pregnancy, when treatment is of value to both mother and child, would prevent many of the ophthalmic tragedies quite as effectively as routine Crede treatments has aided in eliminating ophthalmia neonatorum. Incidentally, blind school admissions due to ophthalmia neonatorum have dropped from 30 per cent to 8 per cent in twenty years. The curves of admission from syphilitic causes and ophthalmia neonatorum in our Minnesota School for the Blind have been widely divergent; the former rising almost 200 per cent, the latter gradually decreasing over a period of ten years. At present there is only one pupil in the Minnesota School for the Blind admitted because of ophthalmia neonatorum.

Volumes could be written upon the subject of ocular manifestations of acquired syphilis. The optic atrophy of tabes and general paresis, together with the frequent ocular palsies accompanying these and other manifestations of cerebro-spinal syphilis, are well known. Even when these conditions are well established, treatment is by no means useless.

Iritis, uveitis and retinochoroiditis due to lues are so frequent in ophthalmic practice they only emphasize the need of routine serologic tests, widespread education of a public ignorant of the necessity not only of prophylaxis but also of persistent therapeutic measures in this disease and the responsibility of our profession in making syphilis a reportable disease. When one considers what has been accomplished in the prevention and control of tuberculosis, the outlook for syphilis and for the prevention of blindness due to this cause is by no means discouraging.

The largest cause of blindness in this country, if monocular injuries are included, is in connection with industry and sports. Large corporations and employers have long recognized the tremendous financial loss resulting from compensation for eye injuries, which constitute 10 per cent of all industrial accidents. In a survey of 583 plants, covered by a study made by the National Society for the Prevention of Blindness and the National Safety Council, it was estimated that the saving through protective goggles amounted to a total of over eighteen million dollars with an additional saving of ten million dollars in wages to some 7,431 injured employees

who suffered shattered lenses, with saving of the eyes. The fact that the General Electric Company, in a ten year period with a constantly increasing force of employes, was able to reduce the number of serious eye accidents from 240 to 7 through the compulsory use of goggles in hazardous occupations is significant and sufficient evidence of their value.

It is not the large corporations and employers who need to be educated as to the value of preventive measures. It is mostly in small industries, in agriculture, and in sports, that we see the largest percentage of damage done through neglect of proper precautions. Further education of the public regarding the value of protective goggles and the consequences of neglect of using them will reduce the high incidence of ocular injuries.

The advantage of non-shatterable lenses should be more widely proclaimed. Every one-eyed person should have a non-shatterable lens in front of his good eye or even plain glass if no refractive correction is needed. Several instances have occurred in my experience where individuals have suffered the loss of or damage to their better eye through foreign particles entering the globe or from ulceration following corneal abrasions or wounds, which could have been averted by the use of non-shatterable lenses. Wearing of well-fitted goggles, with either the extra-tough glass now being developed by certain optical companies, or with non-shatterable glass, affords protection which is entirely worthwhile and should be compulsory for certain eye hazards.

All visual impairment is not due to accident. The removal of eye strain and fatigue are factors of equal importance. Competent correction of substandard vision and eyestrain by lenses should be more frequently required of employes. Even when individuals themselves are well informed as to the value of this procedure, they are not usually as well informed regarding the merits of different types of examiners. Lenses which are ill-fitted or prescribed after an improper measurement of a refractive error produce quite as much fatigue and ultimate visual impairment as no lenses at all. Every ophthalmologist can offer abundant testimony to the fact that fundus lesions from systemic or ordinary ocular disease are rarely discovered in examinations by inexpert hands.

The question of efficient illumination is one which looms large, not only in industrial work but in home lighting. Ophthalmologists probably err frequently in considering only the refraction errors, without inquiring into the type of work, the quality of lighting, or the elimination of glare, in connection with eye discomfort for which patients consult them. Definite standards of illumination are becoming established through the joint work of the Illuminating Engineering Society, and the American Institute of Architecture. Light meters will gradually become a universal means of determining adequate illumination.

Glaucoma is the attributed cause of one-seventh of adult blindness among the 65,000 afflicted persons recorded in our last census. In Minnesota the incidence of glaucoma among applicants for pension under the Social Security laws is approximately 12 per cent. How may this figure be broken down?

It is true that diagnosis of chronic glaucoma simplex is a somewhat technical procedure. Failure to recognize it at a proper stage for effective treatment, or before one eye has become blind, is due to several causes. One of these is the resignation to decreascent changes by many individuals past middle life who simply accept visual failure as one of the penalties of age. An improper diagnosis of cataracts in occasional instances with advice to delay treatment, or failure to seek expert attention until vision is quite lost, is the reason for lack of success in treatment. Very frequently ignorance and a false idea of economy, engendered by newspaper or show window advertisement of "Eyes examined free," lure many individuals into examinations where salesmanship far exceeds competency. Glaucoma fails of recognition very largely because medical men neglect and optometrists and opticians do not possess the ability to make ophthalmoscopic examinations, to test the intraocular tension and check the fields of vision, often because central vision remains normal. This leads to tragic consequences. Glaucoma can be detected *only* by a thorough examination of the optic nerve, testing the tension of the eyeball and testing the visual fields.

Not infrequently serious damage results also because ophthalmologists fail to impress upon patients in whom incipient glaucoma *has been*

properly diagnosed, the serious consequences of neglect, and the great necessity for periodic examinations and persistent treatment. Frequently the patient becomes careless until he

vision. He has paid the penalty of a "free examination."

Case 2.—John S., aged sixty-two, began to lose vision in the right eye at the age of fifty. He consulted an

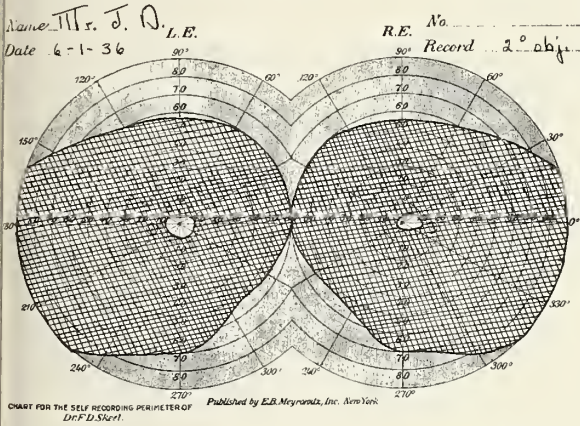


Fig. 1.

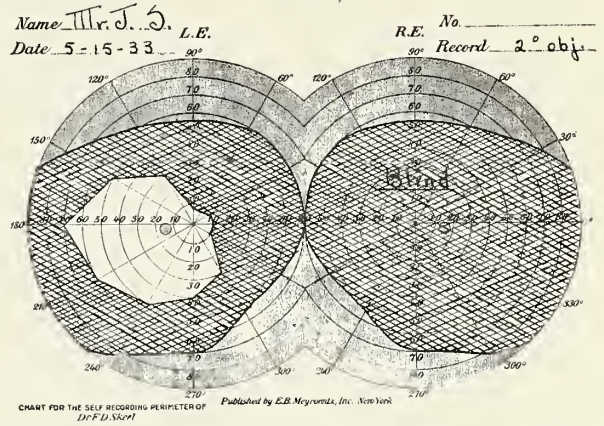


Fig. 2.

awakens to the fact that his vision is seriously impaired. Neglect of proper advice, and too great dependency upon miotics, causes irreparable damage from glaucoma quite as frequently as inability to obtain the glaucoma patient at a time when treatment will preserve vision. Even acute glaucoma is too frequently wrongly diagnosed as iritis; atropine treatment is given and irremediable damage results. I wish to offer a brief series of six cases each of which illustrates the technic of blindness from glaucoma, including delay in treatment, wrong diagnosis, refusal of operation, failure of follow-up treatment, and complications which are preventable.

Case Reports

Case 1.—Mr. J. D., aged forty-four, a myope, complained of gradual loss of sight in his right eye over a period of three years. No ophthalmoscopic examination had been made, glasses being changed from time to time by an optometrist. Vision in the right eye was 20/70, in the left eye 20/30. The fields of vision were reduced as shown in Figure 1. Tonometric measurements were 38 mg. and 43 mg. right and left respectively.

Diagnosis: Glaucoma simplex. Simple iris inclusion operations reduced tension which when last measured, February 15, 1936, was 9 mg. and 13 mg. respectively, the reduced fields of vision being maintained and the vision of the left eye remaining 20/30.

Comment: Had this man received a competent examination when vision began to fail, when optic nerve impairment would have been noted, he would have retained vision in the right eye and avoided marked loss of the visual field now reduced to "gunbarrel"

ophthalmologist, who recognized simple chronic glaucoma. He was properly advised as to treatment and periodic examinations. He neglected the advice and treatment prescribed until he became quite blind in the right eye, and the left eye began to fail. He again visited his ophthalmologist and was informed of the serious nature of his trouble. A miotic was prescribed, which was used intermittently. When he came for examination December 15, 1932, vision in the right eye was reduced to light perception; in the left eye to 20/50 with an hemianopic field of vision as shown in Figure 2. Tension in the right eye was 61 mg., left eye 55 mg., with the Gradle-Schiotz tonometer. Examination showed marked glaucomatous cupping and atrophy of the optic nerves.

Diagnosis: Right eye: Absolute glaucoma; left eye: Eye-advanced glaucoma simplex.

December 17, 1932, an iris inclusion operation was done to effect permanent subconjunctival drainage, reducing tension to 15 mg. This was maintained five months. A supplementary operation was required May 18, 1933, because of recurrent tension. Periodic tests over three years showed his remaining field of vision is preserved. His vision has remained 20/30.

Comment: The seriousness of the diagnosis and prognosis was not impressed upon this man until he had completely lost vision in one eye, and vision of the left eye reduced to 20/50 with marked field of vision changes. The "neglect" in this case may in part be ascribed to failure to actually frighten this patient into seeking relief from threatened blindness at the opportune stage. Preventive surgical treatment would have been more effective if begun several years earlier.

Case 3.—Mrs. J. M., aged sixty, came April 13, 1934. Vision had been failing for two years. Her family

doctor in June, 1933, made a diagnosis of cataracts. She was told to wait until vision was gone and then have her cataracts removed. Her physician did not examine her eyegrounds. When first seen vision was:

Right: 20/200 S. 150

Left: 8/120 No S.

ing four weeks she would not consent to operation under any circumstances, although urged to have this done immediately at each of five visits. She did, however, use the miotics prescribed very faithfully over a period of twenty months but would not come for examination.

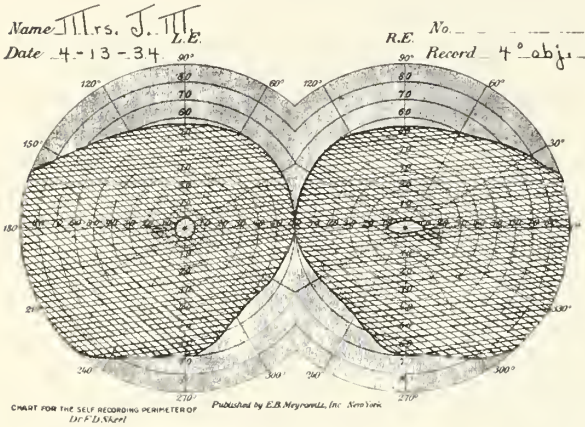


Fig. 3.

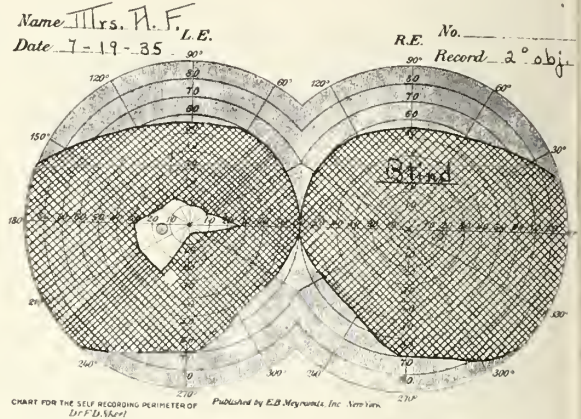


Fig. 4.

There was advanced glaucomatous cupping of both nerve heads. *There were no cataracts.* Tension: right 46 mg., left 29 mg. Fields of vision as shown in Figure 3.

Iris inclusion operations on both eyes were done April 18, 1934. On June 16, 1934, vision in the right eye was 20/30, in the left eye 20/50-2. Tension: right 17 mg., left 18.5 mg.

Comment: There can be no more striking comment upon this case than the illustration of the very great reduction of the fields of vision. Failure to make an ophthalmoscopic examination and ascertain that destructive glaucoma and *not* cataracts was the correct diagnosis. As is always the case, vision lost from glaucomatous atrophy of the optic nerves was permanent.

Case 4.—Mrs. A. F., aged sixty-six, came July 19, 1935, with the statement that the sight of her right eye had gradually been lost during a period of five years. She had consulted an oculist in 1934. He properly diagnosed her glaucoma and prescribed treatment. She consulted a second oculist, who confirmed the diagnosis, approved the treatment, and strongly advised its continuance. She continued it very irregularly, and for ten weeks preceding her visit to me had omitted it entirely.

On my first examination vision in the right eye was found reduced to hand movements, in the left eye to 8/100. She was unable to read any ordinary print. The tension of the right eye was 43 mg., of the left 61 mg. She had typical bilateral cupping of the optic discs. The field of vision could not be mapped out in the right eye; in the left eye reduced to the lower temporal quadrant as illustrated in Figure 4.

Tension could be reduced but not controlled within normal limits by the faithful use of miotics. Operation was emphatically advised. During the succeed-

Finally on March 13, 1937, examination showed tension in the right eye was 74 mg., in the left 58 mg. The field of vision had encroached upon the fixation point as shown. In the right eye the iris was atrophic. There was a mature cataract with a secondary iritis, and the cornea had begun to show degenerative changes.

On March 24, the right eye was submitted to a trephine operation, the left to an iris inclusion operation. On April 10, 1937, vision in the left eye was 20/100. The tension of each eye was well controlled. The result will doubtless remain.

Comment: This patient could have saved the vision in the right eye and very good vision in her left eye had she followed the advice given her when she consulted the first oculist in 1934. She certainly was sufficiently impressed with the seriousness of the malady and the probable outcome of neglect of treatment. Neglect on economic grounds was not justified, but the mental hazard of undertaking surgery caused this woman to delay treatment. Perhaps it could have been avoided had she been properly reassured and her mental fears dispelled.

Case 5.—Mrs. M. P., aged seventy-three, came November 20, 1935, with a history of failing vision for one year. Three months previously she consulted an optometrist who made a diagnosis of cataracts, gave her sixteen treatments with colored lights, and sold her two pairs of glasses which did not improve her vision.

When first examined by me, her vision in each eye was reduced to counting fingers at one foot. The tension in each eye was 74 mg. with the Schiotz-Gradle tonometer. There was very advanced glaucomatous cupping with a moderate lens haze. She had very little lens opacity. Fields of vision could not be recorded.

On November 25, bilateral iris inclusions with meridional iridotomies were done. Although there was no improvement in vision in either eye, the tension was reduced to 22 mg. in the right eye and 10 mg. in the left eye.

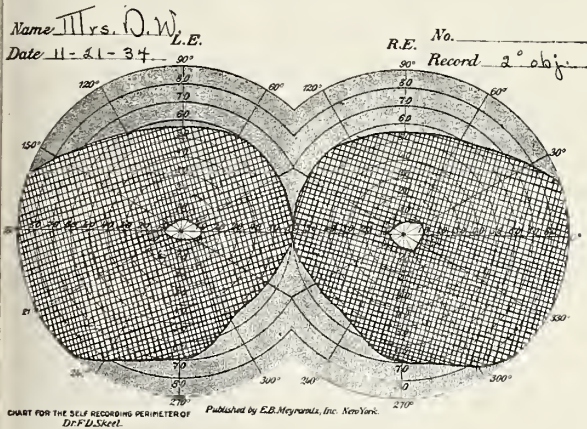


Fig. 5.

Comments: This is distinctly a case of blindness due to neglect, incompetent examination, wrong diagnosis and treatment by an optometrist, whose attitude toward the case could hardly be called less than criminal. Of course the patient's ignorance of things ophthalmic was a very large contributing factor. Consultation with an "optometrist" for false economic reasons led to total blindness.

Case 6.—Mrs. D. W., aged seventy, consulted me on February 27, 1934. Vision had been gradually failing for about four years. She had consulted two physicians in her home town, who told her that she had cataracts, and advised operation for their removal.

Examination showed cataracts present with vision 3/100 in each eye; but the projected fields of vision were exceedingly contracted in all directions to within 10 degrees of the fixation point. The pupils were moderately dilated. The tension registered 33 mg. in the right eye and 38 mg. in the left. The fundi could not be seen because of immature cataracts in each eye.

April 2, 1934, bilateral iris inclusion operations successfully relieved tension, which has remained well controlled. The lens opacities in each eye gradually increased. On May 18, 1934, the cataract in the left eye was successfully removed. August 27, 1934, the right eye was also successfully operated upon for removal of the opaque lens. When last examined in April, 1937, her vision was 20/50 in each eye. The field of vision, of course, was hopelessly contracted, as shown in Figure 5.

Comment: This demonstrates a true loss of fields of vision due to neglect in recognizing a glaucomatous state underlying cataract development. When she came for consultation, her visual fields were contracted to "gunbarrel" type. Although the glaucoma was successfully relieved, and the cataracts removed, the patient would have retained much better vision if an earlier diagnosis had been made.

These all too frequent instances of patients presenting themselves with marked loss of vision and visual fields vividly illustrate the results of neglect. Most of them were avoidable. Such cases plainly emphasize the necessity for careful study of the eyeground, measurement of intraocular tension and testing of the visual fields as a part of every eye examination.

Eye examinations should be a part of all physical surveys. There is no more important medical social work than that pertaining to the eye health of school children. No class of physical defects can be so effectively diagnosed or corrected at such little expense as errors of refraction. Even with the best possible correction of refractive errors and the most favorable school conditions, there is a large class of children whose vision is inadequate for ordinary purposes of education. In the three major cities in Minnesota in 1935-1936 we had 234 students enrolled in special sight saving classes. The selection of these students by our school hygiene directors deserves the highest commendation. Outside of these three cities, unfortunately, there are no school hygiene directors. The chief difficulty lies in the rural districts where too little progress has been made toward examination of the pre-school child. Every teacher should acquire knowledge and experience in vision testing technic. In the rural districts public health and school nurses should be especially trained in the examination and detection of the unusual defects of vision requiring special educational facilities. The medical profession must provide the leadership in the mobilization of effort toward conservation of the visually handicapped child, and in the education of parents as to the proper means of securing it. Newspaper publicity (untainted by commercial advertising), especially syndicated articles by competent authorities, are good propaganda. Likewise, articles in such lay journals as *Hygeia* and *Public Health* are good public education.

Since no sight saving classes are available for children in rural districts, parents should be better informed regarding the facilities afforded at our State School for the Blind. A State School for the Blind is quite generally considered an institution at which only children who have no sight can be educated in reading Braille or be taught some means of useful employment. As a matter of fact, our State Schools for the Blind

now embrace a much larger activity. In recent years every effort is being made to parallel the work of our city sight saving classes and to afford the opportunity for education of children from the state at large equal to that provided in our larger cities. Sight conservation classes are being constantly developed under a competent staff of instructors so that in all probability, with augmented enrollment of this special group, the name of the institution will ultimately have to be changed. This subject deserves emphasis because physicians and the public are not aware of the fine opportunities afforded and available to children from outside the larger cities.

Still another conservation opportunity deserves special mention: namely, children with monocular strabismus. They constitute the largest single group in which there exists serious impairment of vision in one eye. It seems necessary to emphasize three well established facts:

1. That strabismus is rarely outgrown.
2. That in 50 per cent of children crossed eyes can be straightened by means of proper and complete correction of refraction errors and with orthoptic training.
3. And, most important, that the neglected crossed eye child loses vision in the deviating eye unless measures are taken to correct the defect before the pre-school age. Vision once lost is rarely regained after the age of six.

Almost daily one is impressed with the fact that physicians, whose advice is first sought by parents of children with crossed eyes, do not properly appreciate the fact that this loss of vision occurs in the deviating eye and is avoidable. Amblyopia, or loss of vision in the deviating eye, results from involuntary suppression or inhibition of vision to prevent diplopia. If treatment can be begun and completed before school age, this amblyopia can usually be prevented, or vision can be reclaimed, by proper treatment.

It is remarkable how many parents bring their children for examination on account of strabismus only when they attain school age, or for esthetic reasons. In some manner they too frequently gain the impression that treatment is unnecessary and without prospect of benefit until the child is ready for school. When informed that the deviating eye has defective vision, they express great surprise and not infrequently re-

sentment against earlier advice they have obtained.

By obtaining these children during the pre-school age, we are able to measure and correct the underlying errors of refraction, and, by occlusion of the straight eye, force the use of the deviating eye to prevent the gradual deterioration of vision which invariably develops. This conservation of vision in the deviating eye is often possible even before it is expedient to prescribe glasses. In the last few years, the new devices developed for the encouragement of fusion training and muscle exercises have been found very useful in competent hands. Optometrists sometimes capitalize the matter of muscle exercises to a point of absurdity and entirely disregard the true principles of orthoptic training. Unfortunately the gullible public, because of the unwarranted assumption of the title "doctor," does not discriminate in its choice between optometrists and ophthalmologists. It is impossible to examine a child's eyes accurately without the use of cycloplegia. Tests must be objective and not subjective. Proper examination of the child's eyes requires skill in retinoscopy. It cannot be properly done without the use of cycloplegics. The advice of the family physician in these matters should be final. He must emphasize the importance of early examination of the cross-eyed child; that effective prevention of deterioration of vision must be begun as soon as the strabismus manifests itself, or at the earliest age possible; and that a proper examination cannot be made without the aid of cycloplegia.

In conclusion: Prevention of visual impairment is not exclusively a problem confined to the ophthalmologist. It affects every branch of medicine. It concerns the obstetrician, neurologist, general physician, industrial surgeon, and the school's hygiene director. Examination of the eye is as much a part of a general health examination as that of any other part of the anatomy. When we are stressing the necessity and importance of periodic physical examinations, let us not forget the use of the ophthalmoscope and every other scientific aid for determination of the *reasons* for defective vision.

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PROTEIN DEFICIENCY EDEMA*

SAM BOYER, Jr., M.D.

Duluth, Minnesota

EDEMA is one of the most common physical findings and occurs in a number of diseases. Often its cause may be most obscure and its successful treatment prove to be stubborn and puzzling. Edema has been defined by various clinicians and pathologists as "an abnormal collection of fluid within the tissue spaces and body cavities." Ordinarily it is our custom to think of cardiac and renal diseases primarily when we see a patient presenting edema, forgetting that edema may not only be cardiac or renal, but also mechanical or obstructive, inflammatory, allergic, and nutritive.

Factors entering into the development of edema are: (1) increased intracapillary pressure; (2) changes in the serum proteins; (3) increased capillary permeability, and (4) changes in the electrolytic concentration. Other factors, however, also enter into the formation of edema.

Starling²¹ was probably the first to give a sound explanation of the pathogenesis of edema. He recognized that the capillary wall is a membrane permeable to certain substances including crystalloids such as glucose, urea, and salts, which easily pass through and exert no osmotic pressure; but that colloids, such as the serum proteins which do not normally pass through the wall do exert an osmotic pressure. It was his belief that the mechanical or hydrostatic intracapillary pressure at the proximal end of the capillary causes fluids to filter through the capillary wall into the tissue spaces and that at this end the capillary pressure is higher than the colloid osmotic pressure. At the distal or venous end of the capillary the colloid osmotic pressure is higher than the mechanical pressure and so fluids pass back into the capillary from the tissue spaces (Fig. 1). Landis¹⁰ has demonstrated that normal colloid osmotic pressure varies from 29 to 40 cm. of water, with an average of 36 cm. of water¹¹ and that the hydrostatic pressure within the capillary varies from 45 cm. of water at the arterial end of the capillary to 22 cm. of water at the venous end. Knowing these figures

and therefore being able to correctly visualize pressure relationships existing due to these two factors, it at once becomes apparent that there is a definite equilibrium existing between the

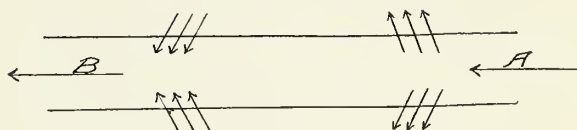


Fig. 1. Normally the hydrostatic pressure at the arterial end of the capillary (A) exceeds colloid osmotic pressure so that fluid passes through the capillary wall into the tissue spaces. At the venous end of the capillary (B) the colloid osmotic pressure exceeds the hydrostatic pressure and tissue fluid passes back into the blood stream.

hydrostatic pressure on the one hand and the colloid osmotic pressure on the other. Any increase in hydrostatic pressure, whether due to increased venous pressure from heart disease or mechanical obstruction from venous thrombosis or tumor masses, will result in an increased intracapillary pressure with the gradual accumulation of fluid in the tissue spaces, all other factors remaining equal. Likewise, a decrease in the colloid osmotic pressure will cause less tissue fluid to pass back into the capillary and edema will result. Trauma, warmth, and change in posture increase the intracapillary pressure^{8,9,12,26} and anoxemia tends to cause an increase in capillary permeability.⁷ It has also been demonstrated¹⁴ that mechanical obstruction will result in increased capillary pressure and edema. If it were not for the pressure exerted by the tissues themselves^{20,22} edema would soon result in people who are in the erect position for long, and indeed it frequently does in those individuals who are on their feet for long periods of time and in whom loss of tissue elasticity has occurred. This is even more common during hot weather, as we know, and in the tropics. The tissue fluids and particularly lymph may exert an osmotic pressure and it is an age-old belief that salt will produce edema, the sodium ion in particular.

Reviewing these various factors which exist in the pathogenesis of edema, Landis¹¹ has classified them into primary and contributory factors and

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shown the relationship existing between them and various clinical types of edema (Table I).

TABLE I. FACTORS IN THE PATHOGENESIS OF EDEMA
(after Landis)

Factors favoring edema formation	Clinical examples
<i>A. Primary factors</i>	
1. Elevated capillary pressure	1. (a) External pressure on veins (b) Thrombophlebitis (c) Cardiac edema with venous congestion
2. Lowered Colloid osmotic pressure	2. (a) Nutritional edema (b) Nephrotic edema (c) Cardiac edema (with malnutrition)
3. Damage to capillary wall	3. (a) Inflammatory edema (b) Nephritic edema (c) Cardiac edema (chronic anoxemia)
4. Lymphatic obstruction	4. (a) Lymphedema (b) Cardiac edema with venous congestion
<i>B. Contributory factors</i>	
5. Low tissue pressure	5. Edema of periorbital tissues and genitalia
6. High salt intake	6. Increases edema if water is available
7. High fluid intake	7. Increases edema if salt is available
8. Warm environment	8. (a) Heat edema (b) Increases all types of edema
9. Disturbed innervation	9. (a) Trophedema (b) Unilateral edema in hemiplegia

It is the edema which is caused by a reduction in the colloid osmotic pressure and in particular that termed nutritional edema, but more aptly called protein deficiency edema, which I now wish to discuss.

Numerous terms have been applied to this form of edema and included among them we find such names as nutritional edema, starvation

edema, war edema, prison dropsy, edema from inadequate food, and edema without albuminuria. Since all these forms of edema are associated with a common factor, i.e., a reduction in the

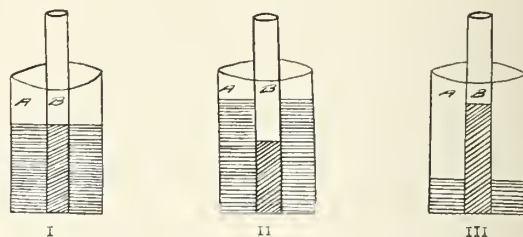


Fig. 2. All other factors being equal, in (I) the serum proteins are normal and the fluids are in a state of equilibrium; in (II) the serum proteins are reduced and the fluid collects in the tissues; in (III) the serum proteins are increased and the tissues are dehydrated. A, Tissue spaces. B, Capillaries.

serum proteins in the blood, the blanket term of protein deficiency edema seems to be the most applicable.

Although it has been only during the past two decades that our attention has been concentrated on this form of edema, in reality its history dates back for centuries. Nixon,¹⁹ quoting Herrick, states regarding the army besieging Naples in 1528—"Those soldiers who were not already confined to bed in their tents, were seen with pallid visages, swelled legs, and bloated bellies, scarcely able to crawl." This was probably the first description of edema due to a deficiency of protein. Again it was noted in the men of Napoleon's Army on the retreat from Moscow in 1812. In 1865, Cornish referred to its treatment. During the Great War, the so-called "starvation edema" appeared at Lillie in 1914. From 1915 on there were numerous cases in the German prison camps, Galacia and Poland.

Starling's basic work has been referred to above. According to his conceptions, any disturbance in the equilibrium existing between intracapillary pressure and colloid osmotic pressure would lead to the appearance of edema, so that with a reduction in serum protein concentration, edema would appear (Fig. 2). Since then a great deal of experimental and investigative work has been done on animals and humans. Leiter¹⁵ produced edema in dogs by repeated plasmapheresis. Weech and Ling^{23,24} in China, successfully demonstrated in the undernourished Chinese the relationship between the appearance of edema and the existant serum proteins. You-

mans,²⁷ in this country, has shown that the epidemic edema existant in Tennessee is definitely related to a deficient diet and thereby to a lowered serum protein.

Moore and Van Slyke,¹⁸ averaging their values with those of other authors set the normal total protein at 6.3 to 8 grams per cent, serum albumen at 3.6 to 5 grams per cent and serum globulin ranging from 2 to 3.5 grams per cent. The critical levels, that is the levels at which edema appears, were set at 5.5 grams per cent for the total protein and 2.5 grams per cent for the serum albumen. Weech and Ling²⁴ felt that edema appeared when the serum albumen fell to 2.9 grams per cent. Weech²³ has shown that instead of the normal albumen globulin ration of 1.3 to 2.5 the ratio is reversed in nutritional edema, although not as low as in nephrotic edema. Youmans²⁵ feels that edema may appear when the serum protein has not yet fallen to critical levels, but is at a low normal reading and attributes the appearance of edema to such factors as the salt and water intake, posture, environmental temperature and the pressure or tension exerted by the tissues.

Of the two types of protein playing a rôle in the production of protein deficiency edema, albumen, and globulin, we find that the former is of the greater importance. Goeverts⁵ has shown that serum albumen possesses an osmotic pressure of 7.54 cm. of water, while serum globulin exerts a pressure of 1.95 cm. of water. It is obvious therefore that, of the two, serum albumen is of the greater importance because it exerts an osmotic pressure four times that of the serum globulin. We must remember in discussing this type of edema that it is the osmotic pressure which is of importance and that since albumen exerts the greatest pressure any reduction in this protein fraction will be of more importance and of greater effect than reduction in the serum globulin. This has been definitely shown by the various authors mentioned above. Another factor which makes the loss of albumen of greater importance than globulin loss is that the albumen molecule is smaller than the globulin molecule and consequently more easily lost.

For many years although the level of serum proteins was definitely associated with the appearance of edema, it has not been until more recent years that this has been recognized in cases other than the so called nutritional edema.

We now are able to recognize various groups of this form of edema namely due to:

1. Deficient protein intake
2. Loss of protein
 - Proteinuria (Albuminuria)
 - Diarrhea
 - Hemorrhage, especially from the bowel
 - Purulent drainage
 - Transudates with a high protein content
3. Inability of the body to assimilate protein.

The production of edema by diet deficient in protein has been dwelt upon at length. The works of Youmans, Weech and Ling, and Liu have been noted. Landis and Leopold¹³ have noted the appearance of edema in a patient with tuberculous enteritis and a massive diarrhea. Meyer,¹⁷ Eaton and Jones⁴ and Menard¹⁶ and others have all noted the appearance of edema in patients when the protein intake has been deficient, and there is a concomittant loss of protein by drainage together with a high fluid and salt intake. Binger and Keith³ have observed edema associated with a deficiency in serum proteins due to inability of the individual to assimilate protein because of severe pancreatitis and hepatitis.

To clarify what has been said I now wish to report two cases.

The first is that of a white female, aged forty-seven, who was first seen in a state of cardiac decompensation. Her history was primarily that of thyrotoxicosis with the subsequent development of thyrotoxic heart disease. Ligation of the superior thyroid arteries had been performed in an attempt to control the toxicity. However, cardiac failure continued with increasing edema, dyspnea, and nausea. Examination revealed findings typical of a hydrothorax on the right side, a heart enlarged to the left with a systolic murmur at the mitral and aortic areas, both well transmitted. The pulse rate was totally irregular and the blood pressure 134 systolic. The abdominal wall was slightly edematous and the liver was palpable three centimeters below the right costal margin. There was massive edema of the lower extremities. The venous pressure was 12 cm. of water. Laboratory examination included urinalysis, blood count, and blood chemistry, all of which were normal.

The patient was placed at absolute bed rest, fluids were limited, oxygen was supplied by nasal catheter at 6 liters per minute and the patient was digitalized. For forty successive days a thoracentesis was performed on the right side with the daily withdrawal of 1,000 c.c. of fluid. Despite these measures she failed to improve. The edema of the abdominal wall in-

creased until it was massive in extent. Theocin was given in ten grain doses three times a day without success. Salyrgan preceded by ammonium chloride was of no avail. Repeated urinalysis revealed only a small quantity of albumen. Finally an estimation of the protein in the thoracic fluid was performed and was found to be 37.5 grams per liter. The serum protein was 5 grams and the serum albumen 3.2 grams with the globulin 1.8 grams. The albumen globulin ratio was 1.7. It was thought that a protein deficiency existed and the patient was consequently given 150 grams of protein in her diet daily. She rapidly grew better and was shortly able to be out of bed, have metabolic rate determinations and successfully received deep x-ray treatment of the thyroid.

We have here a patient who was thyrotoxic and who eventually developed a thyrotoxic heart disease and then decompensation. Coincident with her state of cardiac decompensation and increased intracapillary pressure, she developed an increased capillary permeability probably due to chronic anoxemia and thus a passage of the protein through the capillaries into the body cavities. We find that hydrostatic or intracapillary pressure, capillary permeability, and the subsequent loss of serum protein plus the possibility of malnutrition resulted in anasarca. A vicious cycle had been instituted which could be corrected only by increasing the serum protein through increasing the protein in the diet.

The second case I wish to discuss, I present to you mainly to demonstrate that with adequate clinical laboratory study unavailable, a diagnosis of protein deficiency edema may be made by thorough history taking, complete physical examination and simple laboratory data.

The patient was a white female, twenty-six years of age. She offered as a chief complaint swelling of the ankles, about the eyes, and the skin of the chest and abdomen. This had been present off and on for about six months and apparently had no diurnal occurrence. It had not handicapped her, but had been a source of worry. History by systems was essentially negative. Physical examination revealed no evidence of cardiac, renal, or hepatic disease. There was pitting edema of the ankles. Laboratory data included a complete blood count which was entirely normal and gave no evidence of anemia. Repeated examination of the urine, using a twenty-four hour specimen, consistently failed to show any albumen. The cause of her edema was difficult to explain. I have purposely failed to mention her social history which indicated that for two years she had worked in a packing plant and having sickened of the sight of meat had included very little in her diet. She had also consumed very little milk, cheese, or eggs. Her diet consisted mainly of fruit and veg-

etables. It was impossible to perform accurate scientific laboratory tests, but it was my feeling that this patient had a protein deficiency edema. The situation was carefully explained to her and she was urged to eat a certain amount of meat, milk, eggs, and cheese daily and to limit the amount of salt. She followed dietary instructions faithfully and has since had no recurrence of the edema.

This is satisfactory evidence that we do not need to resort to the extremely well equipped laboratory, but may depend upon our history and physical examinations plus simple data which may be secured in any office.

Meyer's¹⁷ case demonstrates the effect of protein restriction, protein loss by purulent drainage, and the dilution of serum proteins by the intravenous administration of large amounts of saline and glucose. It bears out the contention of Beard and Blalock^{1,2} that in surgical cases the administration of intravenous fluids dilutes the serum proteins, so that already lowered they may be decreased still farther with edema resulting.

The treatment of protein deficiency edema naturally consists primarily in the administration of protein in large quantities. However, water without salt cannot be retained. In many cases when the serum proteins are at the borderline, that is when they are at or slightly above the critical level, edema will appear.²⁵ In these cases the simple restriction of salt from the diet will result in the disappearance of edema. Therefore in treating this type of edema, it would appear best to not only give high protein diets, but also to make that a salt free or salt low diet with restriction of fluids. The protein should be given as high as one hundred to one hundred and fifty grams daily. Animal protein will secure more rapid and satisfactory results, and the control of salt and water intake with bed rest are advisable. Scientifically it is possible to compute the amount of protein necessary by giving one gram of protein per kilogram body weight plus that which is lost in the urine, if that is the route of protein deprivation. Blood transfusions and the intravenous administration of gum acacia, after the method of Senn and Hartman⁶ are to be resorted to when nothing can be taken orally. If small amounts of liquids can be tolerated by mouth, egg albumen, gelatine, and milk are the proteins of choice. The use of mercurial diuretics is questionable and certainly one should

defer their use if there is the slightest question of already existent renal damage. Ammonium chloride and other salts may be used in an attempt to upset the electrolytic concentration and thus produce diuresis.

A word may be said here relative to the edema existent in cardiac and renal disease. In the former, particularly the hypertensive type, the patients are often given low protein diets, thus lowering the serum proteins and producing a potential hydropigenous state. This is often kept up after the appearance of edema. It would be better to give these individuals diets high in protein. If this is done, one is less apt to find resistant and intractable cardiac edema. Again, the same may be said regarding the nephritic. Here there exist all of the forces having to do with the production of edema. It would be more advisable in these individuals, if the protein end products in the blood are normal, to give diets containing an adequate amount of protein. In many operative cases the nutrition has been poor and the serum proteins are low. Post-operatively the patient is given copious amounts of saline, often with the appearance of edema. Knowing that these fluids may dilute the proteins, lowering them still more, when because of poor nourishment they are already lowered, and that salt in these cases may produce edema, it would seem best to maintain the water balance by giving glucose in isotonic solution.

Therefore, we see that the essential treatment of protein deficiency edema is to give high protein, salt free diets, and that the administration of protein in other types of edema is an aid in decreasing the same. In conclusion, it is to be remembered that edema is a symptom and sign, not a disease, to be interpreted as part of a disease process with the treatment incorporated in that of the original disease.

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THE SERUM TREATMENT OF PNEUMOCOCCUS LOBAR PNEUMONIA*

C. N. HENSEL, M.D., F.A.C.P.

Saint Paul, Minnesota

THE problem of pneumonia has been known since the time of Hippocrates. It has been reported in all countries, and in all climates. It attacks the rich and poor, the young and the old and is especially prevalent and fatal in the elderly. The mortality has always been high and the outcome unpredictable.

Nothing was known of the bacterial etiology of pneumonia until the year 1880. In September of that year, Sternberg in Germany inoculated rabbits with his own saliva and isolated a micrococcus. About the same time Pasteur in Paris discovered a similar organism in the saliva of a child dead of hydrophobia. There was, however, no suspicion that this organism was concerned in the etiology of pneumonia.

It was not until 1884 that Fraenkel in Germany determined that the organism found by Sternberg and Pasteur in saliva and known as the "coccus of sputum septicemia," was the most frequent organism in acute pneumonia. At first there was some confusion between this organism and that described by Friedlander in 1883.

By 1886, Fraenkel and Weichselbaum had demonstrated the micrococcus in most cases of pneumonia, and later studies caused their organism to be accepted as the sole cause of acute lobar pneumonia. Their organism was described as elliptical or lance shaped and was found to occur in pairs; hence the designation—diplococcus. A capsule was always found surrounding the organism, and this served to differentiate it from the streptococcus.

Soon attempts were made to produce an immune serum. The brothers Klemperer, from Leyden's Clinic in Berlin, were able to immunize animals by the injection of filtered bouillon cultures of pneumococci obtained from patients ill with pneumonia, and to use the serum from these immunized animals to immunize other animals, or cure them when they had been previously infected. They attempted to produce immunity in human cases of pneumonia by the

injection of the blood serum from patients convalescent from pneumonia, and they reported favorable results in six cases. But the actual obtaining of an effective anti-pneumococcic serum was to be long deferred, as a review of the literature for the past fifty years discloses.

In his textbook on "The Practice of Medicine," in the 1901 edition, Osler has this comment to make on serum therapy:

"Many trials have been made of the curative value of anti-pneumococcic serum in the treatment of pneumonia. Thus far it has not been shown that this influences in any marked degree the course of the disease in man."

In 1902, Neufeld observed, while working with the pneumococcus, that when a suspension of pneumococci was mixed on a slide with homologous immune serum, a reaction occurred which was characterized not only by agglutination of organisms, but also by a "quellung" or swelling of their capsules. He claimed that the reaction could only be observed in the moist state without fixation.

He attempted to apply this method to the typing of pneumococci. His method was to obtain a drop of peritoneal exudate obtained from the mouse's peritoneum six to eight hours after injection, mix this with diagnostic serum and a drop of dilute crystal violet, cover with a cover slip, and examine under oil immersion. He could type the organisms in many instances, but because of rapid drying he abandoned this method for the macroscopic agglutination method.

Neufeld found considerable variety in pneumococci obtained from different patients ill with pneumonia, a variation which he referred to as races or strains. He found one rather predominant strain and succeeded in producing an immune serum by injecting a horse with cultures of this strain. He found that there were a considerable number of strains of pneumococci that would not agglutinate with his immune serum.

In 1910, the Rockefeller Hospital for Medical Research was opened in New York City, and Rufus I. Cole, who had formerly worked with

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Osler, was put in charge of the pneumonia ward. Apparently Cole remembered Osler's dictum that "Pneumonia is a self limited disease and runs its course uninfluenced in any way by medicine," and set himself the goal of finding some specific therapy to lower the death rate in pneumonia. Just as Osler gathered around himself an inspired group of research men and teachers, so, as one reviews the literature on pneumonia, one gathers the impression that Cole has done the same thing.

In the year 1913, there appeared a paper by Dochez and Gillespie⁶ which, as far as I can find, was the first published work from the research study carried on in the pneumonia wards of the new Rockefeller Hospital. They noted that they had received some immune anti-pneumococci horse serum from Professor Neufeld which they called Serum No. 1, and with this as a standard they studied the pneumococci obtained from human cases by means of protection experiments. X

As a result of their study they were able to separate and classify pneumococci into four groups which they designated by the Roman numerals I, II, III, and IV. They stated, "A study of cross protection and agglutination among members of Group IV indicates that this group comprises a number of distinct varieties of the pneumococcus which can not be related to one another by immunologic reactions. Culturally, they are true pneumococci and manifest all the common characteristics of the pneumococcus. A large majority of all the strains studied fall into the three fixed Groups I, II, and III. The minority fall into the mixed or heterogeneous Group IV. The individual members of Groups I and II can be distinguished from each other only by highly immune reactions. The heterogeneous Group IV seems to consist entirely of isolated individuals."

It is interesting to note that just twenty-four years ago at a meeting of the American Medical Association in Minneapolis in June, 1913, Rufus I. Cole² reported on the specific treatment of seventeen cases of pneumonia in the Rockefeller Hospital. Of these, fourteen were of Type I, and three of Type II, as based on the new classification of Dochez and Gillespie.

His method of treatment was as follows: On admission to the hospital a blood culture was ob-

tained, and also a specimen of sputum, and if this was not obtainable, a culture was made from the lung by puncture. A portion of sputum, if obtained, was injected into the peritoneal cavity of a mouse. After five hours the peritoneal cavity was washed out with salt solution, the solution centrifugalized, and a suspension of cells was obtained. Agglutination tests were then carried out against known typed sera. If the sputum organisms failed to be agglutinated by Type I or II sera, it was considered useless to undertake the serum treatment.

While his study of type differentiation was in progress, 2 c.c. of horse serum was injected subcutaneously into the patient to determine the presence of horse serum sensitization. If the patient was found to be non-sensitive, an amount of specific anti-pneumococcic serum, varying from 50 to 100 c.c. and diluted with 50 per cent normal saline solution, was injected intravenously. The response of the patient served as a guide to subsequent treatment. Usually the dose was repeated not oftener than every twelve hours. The amount of serum used ranged from 190 c.c. up to 460 c.c. The earliest the treatment was begun was on the third day of the disease, and the latest was on the sixth day of the disease.

Of the fourteen Type I cases, only one died, a mortality rate of 7 per cent. Of the three Type II cases, one died, a rate of 33.3 per cent. In the surviving cases the serum seemed to have a favorable effect in lowering the temperature, in lessening signs of intoxication, and in shortening the course of the disease. Cole deduced from his studies that specific treatment with specific anti-pneumococcic serum was valuable, but that its use should be begun early in the course of the disease before the infection had reached the maximum degree, beyond which no amount of serum appeared to be effective.

The next step in the further understanding of the bacteriology of the pneumococcus came after the pandemic of influenza of 1918-19, with its terrific mortality from pneumonia. The need seemed greater to find better serum therapy. The Metropolitan Life Insurance Company appointed an Influenza Commission which worked in conjunction with the Bureau of Laboratories of the Health Department of the City of New York.

In 1921, Cooper and her associates³ obtained cultures from the nose and throat of 138 patients

with rhinitis and pharyngitis, from simple influenza-like cases, and cases of influenza complicated with broncho-pneumonia. In forty-seven instances their cultures were sufficiently pure for further study. They found no single variety of pneumococcus to dominate in the inflammatory conditions studied, and they concluded that the pneumococcus was not a primary etiological agent in the contagious type of influenza.

Apparently these authors continued to work on the different types of pneumococci, for in the year 1929 Cooper and her associates⁴ announced that they had been able to subdivide Group IV into ten sub-groups which they designated as Groups IV-XIII.

Three years later, Cooper and her associates⁵ stated that "An investigation into the possibility of treating cases of pneumonia with specific antisera (other than Types I and II antisera) was undertaken because clinical results indicated that cases of pneumonia benefited slightly, *if at all*, by heterologous antisera. For the purpose of preparing suitable antisera from this heterogeneous Group IV, it was first necessary to further classify the various types in this group; to prepare diagnostic antisera for their type identification, and then to prepare specific antisera for treatment." As a result of this study they claim to have identified nineteen additional strains or types which were classified as Types XIV to XXXII.

In their plans to prepare new specific antisera for these newly identified types, they abandoned the old measure of bulk for use in gauging dosage of antisera and substituted the measure of the unit in order to standardize their serum. They define a unit as follows: "A unit is ten times the smallest amount of antiserum that protects the majority of mice against approximately 100,000 fatal doses of culture." They selected 500 units per c.c. as a minimum strength for therapeutic antisera for Types I and II and were attempting to produce antisera of equal potency from their newly identified strains.

In conclusion the authors stated that exclusive of the known Types I, II, III, in lobar pneumonia of adults, Types IV, V, VII and VIII predominated; whereas in the pneumonia of children, Types V, VIa and XIV predominated. Fourteen of the types were found in pneumonic

meningitis, Type XVIII being found most often.

Since type identification of the pneumococcus had come to be such an important laboratory procedure, it was necessary that a simple, rapid and practical method be found. Many methods of pneumococcus typing had been devised, but the one most commonly used was that method in which the peritoneal exudate, obtained from the mouse 18 to 24 hours after injection of the sputum, was tested for agglutination with various typing serums.

In the year 1930, Sabin¹⁰ of New York described the method of injecting sputum into the peritoneal cavity of a mouse. At the end of five hours he withdrew some of the peritoneal exudate, mixed this on a microscopic slide with typing sera, stained with fuchsin, and examined for agglutination under the oil immersion. He stated that agglutination never occurred with normal horse serum, or with heterologous serum.

In the year 1933, Sabin¹¹ recounted the fact that he had previously tried to use the "quellung" reaction described by Neufeld for type determination, but had been unsuccessful; however, a Dr. Goodner of the Rockefeller Institute, traveling in Germany, had observed the method of "rapid-sputum slide-type-identification" as it was carried out in Professor Neufeld's laboratory in Berlin, had used it successfully himself, and demonstrated it to the author. After several trials in the laboratory of the Bellevue Hospital, Sabin found that the test was not always reliable because of the fact that the horse anti-pneumococcus-serum commonly used for typing, frequently gave non-specific reactions. In order to overcome this difficulty he prepared anti-pneumococcic rabbit serum from the various known strains, and when the rabbit serum was used for serum typing, the results were uniformly specific. He found that Neufeld's crystal violet did not always stain the bodies of the pneumococci, so he substituted alkaline methylene blue stain, and this always stained the bodies of the pneumococci a dark blue, leaving clearly visible the swollen unstained capsule. Furthermore, he stated definitely that the sputum should be typed within one to two hours after it was coughed up because the pneumococci autolyzed very rapidly, and if the sputum was allowed to stand, they might completely disintegrate.

When in certain adults and most children,

sputum cannot be obtained by coughing, then the throat is swabbed, and the swab incubated in glucose broth for three to four hours. Then 5 c.c. of this culture is injected into the peritoneum of the mouse, the peritoneal exudate is withdrawn after five hours, and the microscopic "quellung" reaction can be carried out.

Sabin's capsule swelling identification method can be described as follows: "Two small flecks of sputum *coughed up from the lung* were placed on a large cover slip with a small platinum loop 2 mm. in diameter. To each bit of sputum an equal quantity of undiluted rabbit serum of known type was added, Type I serum to one, Type II serum to the other, and to these separate mixtures was added a loopful of standard alkaline methylene blue stain. A deep, large, hollow ground slide, big enough to cover both drops, was used. The edges of the slide were smeared with petrolatum and the slide placed over the cover slip and the preparation inverted and examined with an oil immersion lens and an artificial blue light."

Two minutes' time was allowed for the reaction to be complete. Sabin says it is important to remember that in the ordinary hanging drop preparations, pneumococci show no capsules although occasionally a faint halo of light without any definite outline may be seen about the organism. However, he continues, in the type specific mixtures of sputum and rabbit serum, one finds the pneumococci surrounded by a peripheral zone of characteristic appearance and distinct outline. The peripheral zone consists of a refractile substance which does not take the stain and has a ground glass appearance, the body of the organism within being stained deep blue. While agglutination does occur, Sabin says that agglutination is not the diagnostic reaction, but rather the swelling of the capsule, the so-called "quellung" reaction of Neufeld. So characteristic is this "quellung" reaction that the finding of only a single pneumococcus which shows this "quellung" reaction, is sufficient evidence on which to base the type of pneumococcus in the sputum. When Sabin checked his method against the mouse inoculation method, he stated that in not a single case of lobar pneumonia in which Type I or Type II pneumococcus was identified by the mouse inoculation did he fail to find the "quellung" reaction by his direct sputum method.

The chief value of Sabin's new type identification method is that it can be done as soon as the patient enters the hospital. This allows the institution of specific anti-pneumococcic therapy far sooner than was possible before. Sabin reports on six patients who come to the hospital twenty-four to thirty hours after the onset of their pneumonia. In each case Type I pneumococcus was the infecting organism, as revealed by his rapid typing method, and in each case serum therapy was spectacularly effective.

It is necessary now to trace the development of anti-pneumococci serum up to the present refined and concentrated preparation. In the year 1910, Cole received from Professor Neufeld a culture of a pneumococcus that was most frequently recovered from the sputum of patients ill with pneumonia, and from which Neufeld had prepared an immune serum. Cole and his associates inoculated horses with this Neufeld culture and developed an immune serum of their own which Cole designated as Serum No. 1. Any patients ill with lobar pneumonia in the wards of the Rockefeller Hospital whose sputum pneumococci were compatible with Cole's No. 1 serum, received treatment with No. 1 serum. Later, Cole and his co-workers produced a serum for infections with Type II pneumococcus. The results of serum therapy at the Rockefeller Hospital were reported in the year 1913, as noted earlier in this paper.

Cole used a crude unrefined serum, and the dosage was measured in cubic centimeters. Because of some anaphylactic reactions during the serum administration and the occurrence of serum sickness in a considerable number of treated cases, attempts were made to refine the serum and to concentrate it. Avery, in the year 1915, attempted to fractionate the proteins in the serum and to determine which of the proteins possessed the effective principle. By means of a 43 per cent ammonium sulphate solution, he was able to isolate the effective principle, but during the concentration of the serum there occurred a large loss of the effective substance, upwards of from 25 to 50 per cent, and the use of Avery's concentrated serum was not generally adopted.

In the year 1921, Huntoon, by a different method, concentrated large amounts of anti-pneumococcic serum, and his preparation was given an extensive clinical trial. But the reactions

SERUM TREATMENT OF PNEUMONIA—HENSEL

PER CENT OF MORTALITY IN RELATION TO AGE AND TYPE (1,867 CASES)

Type	Under 20		20-30		30-40		40-50		50-60		Over 60	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
I	59	8.4	187	16.0	179	17.8	110	21.0	60	26.6	32	31.2
II	16	18.7	89	17.9	91	38.4	84	53.5	60	45.0	22	63.6
III	8	12.5	33	15.1	62	29.0	63	44.4	43	69.7	54	59.2
IV	51	13.6	142	13.3	155	21.0	136	29.4	76	38.1	55	54.5
Total	134	11.1	451	15.5	487	24.2	393	34.8	239	42.7	163	52.7

from the use of Huntoon's serum were violent, and the therapeutic results were not encouraging; therefore the use of this preparation was abandoned.

In the year 1924, Felton,⁷ working in the Department of Preventive Medicine and Hygiene of the Harvard Medical School, stated that while studying the virulence of pneumococci and the difference in growth of pneumococci in normal horse serum and immune serum, he found the protective factor to lie in the *globulin* radical of the immune serum.

This globulin factor he was able to precipitate out by treating the serum with fifteen volumes of distilled water, later redissolving the precipitate in sodium chloride. The serum thus concentrated contained 30 per cent less protein and was concentrated from two to twenty times. This serum was administered to more than sixty cases of lobar pneumonia in the Boston City Hospital with favorable results.

Apparently this serum of Felton's did not prove entirely satisfactory because in the year 1928 Felton offered a new method⁸ of serum concentration to replace the Avery method, which latter was found to produce a chill reaction when administered to patients ill with pneumonia. Avery's precipitating vehicle was 44 per cent ammonium sulphate. Felton substituted a 20 per cent solution of anhydrous sodium sulphate for the ammonium sulphate and achieved an equal concentration of serum. This newly concentrated serum of Felton was submitted for clinical use to the physicians of Boston who were intensively studying the serum treatment of lobar pneumonia.

With true Bostonian conservatism Felton appears to have waited for clinical proof of the efficacy of his serum, because in the summary of his paper of 1928 we find his deductions as follows:

"The serum concentrates from the water dilution method and the sodium sulphate method have been used clinically (in cases of lobar pneumonia) for the past two years, with only a small percentage of troublesome reactions; whereas the serum produced by the ammonium sulphate method, when used clinically, produced severe reactions in a high percentage of cases."

It is now nearly fifty years since that first attempt to produce an immune serum was made by the Brothers Klemperer in Berlin. But only within the past few years has the serum been perfected, the types of pneumococci sufficiently classified, and methods developed for immediate typing, so that serum therapy can be instituted early in the course of the disease.

General Considerations and Selection of Cases for Specific Serum Therapy

The most frequent types of the pneumococcus encountered in lobar pneumonia are Types I, II, III, VIII, VII and V, in approximately that order. These six types are found in the sputum in about 80 per cent of cases of lobar pneumonia. The mortality rate varies with the different types, but rises progressively in all types with advancing years, and is especially high after sixty years of age.

The above table, taken from an article by Cecil, Baldwin and Larsen,¹ shows the mortality and incidence of the various types of pneumonia according to age periods. In this table, Type IV includes Types IV to XXXII, inclusive, under the newer classification.

The mortality rate also varies with the absence or presence of bacteremia. The following table from the same source reveals this fact very dramatically:

SERUM TREATMENT OF PNEUMONIA—HENSEL

INCIDENCE OF POSITIVE BLOOD CULTURES IN RELATION TO TYPE AND OUTCOME

PATIENTS RECOVERED				PATIENTS DIED		
Type	No. Cases	Bl. Culture Positive	Per Cent Positive	No. Cases	Bl. Culture Positive	Per Cent Positive
I	87	9	10.3	38	24	63.1
II	39	3	7.6	36	28	77.7
III	17	2	11.1	19	8	42.1
IV	64	1	1.5	26	14	53.8
Total	267	15	7.2%	119	74	62.1%

Lord and Heffron⁹ analyzed the percentage distribution of the various types of pneumococci in 9,639 cases of lobar pneumonia collected from the literature as follows:

Type I.....	33.4%
Type II	23.3%
Type III	8.9%
Type IV (all other types).....	34.4%

This table shows that Types I and II make up nearly 60 per cent of all cases of lobar pneumonia in which the type of pneumococcus was determined. Certain general facts regarding these types are now available. Only lobar pneumonia due to Types I and II, and possibly Type VII, respond favorably to specific antipneumococcic therapy. Pneumonia due to these types is almost always primary and characteristically typical lobar pneumonia.

In atypical cases the physical signs may be uncertain for a time, or remain so throughout the illness. It is in such atypical cases, or in those with slowly developing physical signs, that early sputum typing clinches the diagnosis and clears the way to *early* specific serum therapy at a time when such therapy is especially effective.

With typical onsets in *male* patients, Types I or II pneumococcus infections may be expected in 75 per cent of the cases.¹¹ As far as children are concerned, it is difficult to obtain sputum for typing in children under twelve years of age. Owing to the low death rate, the small size of the veins, the difficulty of making repeated intravenous injections, and the lack of any conclusive results thus far obtained in children, treatment with serum is seldom attempted. Patients who are very old and infirm, those with pulmonary edema, and those already in a desperate state of illness, or in collapse, stupor or coma should not be subjected to serum therapy. Such patients are likely to die before adequate dosage can be

given, and even a mild reaction from alien serum may hasten the fatal termination. An illness of such severity is not often encountered within the first four days of the onset.

Precautions Prior to Administration of Serum

According to statistics from the Massachusetts Pneumonia Study,¹¹ extending from the year 1931 through the year 1935, 936 cases of lobar pneumonia received treatment with specific antipneumonic serum. Of these cases, death was attributed to the serum in four instances, three due to thermal reactions and one to an allergy. In interpreting these statistics it is well to remember that a majority of these cases were in hospitals and under the observation of skilled physicians and carefully trained assistants.

The reactions from the serum are not related to its curative properties, but to the proteins in the horse serum. It is generally conceded at the present time that approximately 10 per cent of the population have either latent allergic tendencies or actual manifestations. Therefore patients who are to receive treatment must be selected with extreme care, and the details of serum administration followed out exactly as prescribed.

There are three known groups of patients to whom the administration of horse serum may be dangerous. The first and most hazardous are those with a history of hayfever, asthma, hives, angioneurotic edema, or eczema. The second and less hazardous comprises those who have had a previous injection of horse serum, recent or remote. There is a third group in which the history is negative for allergic diseases or previous injection of horse serum. The only means of detecting cases in this group is by the use of both the skin test and eye test. There is also the group of patients who develop sneezing attacks with watering eyes and running nose when near

horses. Such patients may also be sensitive to horse serum and *should be excluded from specific serum treatment*. Therefore before instituting serum treatment, obtain a history as to the above, and always make skin and eye tests with normal serum in every patient in whom serum administration is contemplated.

Methods for Making the Tests for Sensitivity

For a preliminary test plain horse serum should be no stronger than 1-100; i.e., one part of serum to 99 parts of physiologic solution of sodium chloride. The intracutaneous skin test consists of the injection of 0.05 c.c. of the diluted serum *between* the layers of the skin, using a tuberculin syringe and a fine (26-gauge) needle so that a small wheal is raised. A positive reaction consists of an urticarial swelling with central blanching, peripheral erythema, and itching. This occurs in five to twenty minutes.

By the eye, or ophthalmic test, is meant the instillation of one drop of the diluted plain horse serum into the conjunctival sac of one eye, leaving the other eye for a control. A positive reaction occurs within a few minutes. It consists of a slight injection of the conjunctival vessels and itching if the response is mild; and if the reaction is severe, marked injection of the vessels and edema of the conjunctiva and lids occur. The test should be made first with a 1-100 dilution. Only if this is negative, should a 1-10 dilution be tried. In case of a marked conjunctival reaction, instill one or two drops of 1-1000 adrenalin solution into the sac. *The ophthalmic reaction is generally considered a more true indication of serum sensitivity.*

If there is no history of allergy and the intracutaneous test with 1-100 serum is negative, a test should be made with a 1-10 dilution of serum. If the latter is negative, one may proceed with the administration of the serum.

The concentrated antipneumococci serum causes positive intradermal tests in a large proportion of normal persons and is unreliable for the determination of skin sensitivity.

It is well to make a control intradermal test with physiologic salt solution into the skin of the other forearm. Before any tests for sensitivity are made, fill a syringe with 1-1000 adrenalin solution and have it ready for use.

Should any doubt arise as to the interpretation of the tests for sensitivity, a preliminary trial in-

jection of serum may be given in dosage of 0.5 to 1.0 c.c. intramuscularly, in the upper arm, with a tourniquet placed above the site of injection. Should a reaction occur, the tourniquet is tightened to stop rapid absorption of the injected serum, and an injection of 3 to 5 minims of adrenalin, 1-1000 solution, should be given into the other arm, and the dose repeated if necessary.

Typing of Sputum

The rapid-stained-sputum-slide method of Neufeld, as modified by Sabin, as noted earlier in the paper, should now be made. If no facilities are available for such typing, a specimen of sputum *coughed up from the lung* should be collected in a clean container, without preservative, and shipped to the State Board of Health for typing (be sure to include a brief history of the onset of the illness) and a telegraphic report awaited. While awaiting the typing report, if the onset suggests a frank lobar pneumonia, it is considered good practice to proceed with a preliminary injection of 10,000 to 20,000 units of a polyvalent serum Type I and II.

Administration of Serum and Dosage

The required dosage of serum is unknown and varies with each case. In general, it is known that the serum is most efficacious when given as soon after the onset of the disease as possible. Favorable results have been reported from the use of serum given up to ninety-six hours after the onset. After that time the serum has been proved to be less effective, although if toxemia is marked and the type of infection is known, serum may be tried, but the dose necessary is likely to be much larger. At present in Type I cases, a total of 60,000 units of antipneumococci serum divided into three injections at two-hour-intervals is recommended.

The first dose is a test dose and but 2 c.c. of the serum should be injected *with extreme slowness at a rate of not faster than 1 c.c. per minute by the watch*. The serum should be warmed before injection by placing the vial in water at body temperature. Do not use cloudy serum.

Following the first dose an interval of two hours is allowed to elapse, and a second dose consisting of the remainder of the first vial is given also slowly *during a period of five to ten minutes*. After a further delay of two hours, a third dose totalling 20 c.c. or more of serum is

given during a period of about fifteen minutes.

For several hours after the first three doses, totalling about 30 c.c. or 60,000 units, have been given, no change is likely to be observed, but within eight to twenty-four hours after starting the first dose, there is usually marked improvement. This is more noticeable in patients with Type I infections than in those with Type II infections. The temperature falls, pulse rate becomes slower, toxemia lessens, the area of consolidation ceases to extend, and a previously positive blood culture usually becomes negative.

The most reliable guides to the need of further dosage are the level of the temperature and the presence or absence of bacteremia. If facilities are not available for blood culture, then the need for additional serum may be estimated from the clinical aspect. If additional dosage is deemed necessary, it may be given in amounts of 20,000 to 40,000 units at intervals of two to six hours. Under no circumstances should more than 50 c.c., or 50,000 units, be given at any one time. Treatment of Type VII, or VIII, may require a total of 60,000 to 120,000 units or more of serum.

Serum Reactions and Their Treatment

Two types of reactions may occur either at once or within a short time after the injection. These are the immediate or allergic, and the thermal or chill reaction. Certain symptoms are common to both types of reactions, and at times it is difficult to distinguish between them. The physician should remain at hand or be immediately available for from 30 to 45 minutes after the injection.

In a characteristic type of allergic reaction there may be flushing of the face, dyspnea, cyanosis, lumbar or abdominal pain, a rapid, weak, or irregular pulse, apprehension, and a feeling of sternal oppression, or various combinations of the above. In the Massachusetts Pneumonia Study, such symptoms were usually transient and of a mild or moderate intensity and were noted to have occurred within thirty minutes in 8 per cent of serum-treated cases. Treatment for such reactions consisted of subcutaneous, or intravenous injections of 0.5 to 1.0 c.c. of 1-1000 adrenalin.

In the second type the above reactions were sometimes combined with urticaria and an acute asthmatic attack. These reactions occurred in

patients who gave a history of previous serum administration. Repeated doses of adrenalin should be given for these reactions.

The milder immediate reactions of an allergic type are not a contra-indication to further serum treatment, but subsequent individual doses should be smaller than usual. *The occurrence of urticaria or an asthmatic attack is a contra-indication to further injections.*

Thermal reactions occurred in 20 per cent of the Massachusetts Pneumonia Study. They usually were not serious and their treatment was symptomatic. *Adrenalin was of no value in the treatment of thermal reactions.* The usual serum therapy régime was not modified because of the milder thermal reactions. In cases with the severer type of thermal reaction, a time interval of three to four hours was allowed to elapse after the chill before a subsequent diminished dose of serum was administered. Attempts to produce chill-free sera have been partially successful.

It is desirable to warm the serum to body temperature, inject it slowly, and reject serums containing a precipitate as unfit for use.

Serum sickness occurs from four to twenty-one days after the serum treatment in about one-third of the cases treated. It is usually mild. Treatment consists of soothing applications to the skin, ephedrin by mouth, and salicylates for joint pains. There may be more than one bout of serum sickness.

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THE USE OF THE GASTROSCOPE*

ARTHUR C. KERKHOF, M.D., Ph.D.

Minneapolis, Minnesota

ALTHOUGH gastroscopy has been a recognized method of diagnosis in Europe for some years, it is a relatively new procedure in the United States. Until about four years ago very little gastroscopy had been done in this country. Since then a number of gastroscopists have come to the front. We began to use this method in 1933 and have performed 450 gastroscopies since that time.

In the course of this discussion comparisons will be made between gastroscopy and roentgenology. The x-ray has been the most accurate method of diagnosis in gastric diseases and there is no doubt that the x-ray method in the hands of a competent roentgenologist is the best single method of gastric diagnosis today. The roentgenologist may well boast of the great progress made in his field. Gastroscopy is not offered as a substitute for the x-ray method; it is rather offered as a supplement. Gastroscopists merely want to point out that this new method of direct visualization of the stomach wall offers additional information in those lesions already diagnosed by the roentgenologist. In those diseases not readily diagnosed by the x-ray method, however, gastroscopy offers valuable information which can be obtained only by this method. The roentgenologist makes his diagnosis on changes in form and mobility of the stomach wall as demonstrated by the shadow cast by a barium filled viscus. The gastroscopist, on the other hand, makes his diagnosis by actual observations of changes in form, color, consistency and mobility of the stomach wall. I am sure that all of us would agree that cystoscopy offers valuable information which cannot be obtained from a cystogram. I do not mean to convey the idea that I believe the cystogram to be unnecessary but no one will deny that much more knowledge concerning the actual condition of the bladder mucosa is obtained from a cystoscopy. I once asked Professor Friederick von Mueller what he thought of

gastroscopy as a method of gastric diagnosis. He answered me in two ways. First he assured me that he had adopted this means of diagnosis in his clinic, which fact he said was enough evidence that he thought it to be a valuable adjunct. He also reminded me that when he was a young man the medical profession ridiculed cystoscopy and that he had lived to see the day when this procedure was a common and accepted one. He assured me that gastroscopy would also be an accepted method of diagnosis in years to come.

Before discussing our observations, I believe it might be well to describe the method to those among you who are not familiar with it. The gastroscope may be of several types. The open scope, which is a rigid tube much like an esophagoscope, allows direct vision of the field immediately ahead of the tube. It is the only instrument usable for the removal of foreign bodies. It is limited in its use because only a very small portion of the greater curvature can be brought into view. The other instruments use indirect vision. They are of two types: a rigid scope and a flexible scope. Each consists of a long tube containing an optical system with an eyepiece at the upper end and a prism near the lower end which allows a view at an angle of 90 degrees to the scope. An electric bulb is placed near this prism and a rubber tip is placed at the lower end. The stomach may be inflated with air by means of a bulb at the upper end. These instruments permit a very complete view of the gastric mucosa. The flexible type as a rule allows a more complete visualization of the lesser curvature and the pylorus while the rigid scope because of its interchangeable optical systems allows a better view of the cardia. The view obtained is very clear with either gastroscope. The mucosal folds, peristaltic waves, changes in color and form are easily perceived.

The method is not as disagreeable to the patient as esophagoscopy or bronchoscopy and many patients would rather be gastroscoped than be lavaged with an ordinary Ewald tube. Most physicians not familiar with the method suppose

*From the Department of Medicine at the University of Minnesota and Minneapolis General Hospital. Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 4, 1937.

it to be very dangerous. If ordinary care is exercised in the selection of subjects and the manipulation of the instrument, the method is practically without danger. The flexible instrument is probably slightly more safe than the rigid tube. For example, Henning¹ reports a series of 1,200 gastroscopies with the rigid tube and 1,400 with the flexible tube without a fatality. When I first used this instrument I was not as careful in the selection of my patients as I am now. Consequently, when I attempted to gastroscope an elderly man, age 80, a necrosis in the posterior pharyngeal wall with a resultant fatal mediastinitis occurred. Since then, I have exercised greater precaution and have had no more fatalities. There is also the danger of perforation of the stomach either by actual contact with the instrument or by over-inflation with air. These accidents are very rare. The only difficulty of this type that I have encountered was a small tear in the gastric mucosa due to over-inflation with air. This lesion produced no symptoms. I believe that now we are justified in stating that there is practically no danger from gastroscopy in the hands of careful operators.

Before we are able to discuss the abnormal conditions in the stomach it is well that we fix in our minds the normal pictures of the gastric wall as obtained through the gastroscope. When the normal stomach is inflated we see that the mucosa is a smooth membrane with a pinkish-orange color. The rugæ appear as elevations with valleys of normal mucosa between them.

The rugæ can usually be wiped out with sufficient air pressure; in fact, if this is not possible an abnormal condition is present. One obtains a fairly complete view of the anterior and posterior walls and the greater and lesser curvatures. The angle in the lesser curvature appears as a crescent shaped ridge at the beginning of the antral canal. The antral canal can as a rule be well visualized although it is often difficult to visualize that small portion of the lesser curvature in the antrum. The pylorus can be easily seen as it opens and closes in tune with the peristaltic waves that roll down the antral canal. Peristaltic waves are only rarely seen in the body of the stomach. Changes in form, consistency, color or mobility of the mucosa and stomach wall indicate pathology.

The subject of gastritis is a very interesting

one. In the older literature gastritis was a common topic of discussion. The older clinicians frequently diagnosed certain symptom-complexes as gastritis. However, with the advances made in pathology, that branch of medical science was eventually considered the last word in diagnosis. The pathologists began to notice that they never found the gastritis diagnosed by the clinician. It is true that they were able to recognize the severer forms of chemical gastritis but all other diagnoses of gastritis were taboo because the pathologist could not find the lesion at autopsy and of course only rarely did a patient with gastritis die of his disease. Even today it is true that the pathologist does not find these lesions in a routine autopsy for the reason that immediately following death the gastric ferments digest the mucosa. In fact it has been very difficult for the pathologist to describe the appearance of the normal mucosa from autopsy material. Since the advent of gastroscopy and the emphasis which has been placed on gastritis by this method of diagnosis, pathologists have been on the watch for biopsies of these lesions and to their credit it must be said that they have readily admitted that gastritis does occur, probably not infrequently.

It is in the field of gastritis that the gastroscope has made its greatest contribution up to the present time. Every clinician has seen patients with symptoms of epigastric pain immediately following or coming on one to two hours after meals, belching of gas, feeling of fullness in the epigastrium, nausea or vomiting. In these patients the roentgenologist usually finds nothing. The clinician has been prone to label such people neurotics and has as a result disregarded these symptoms. It is in just these patients with negative x-ray studies and gastric complaints that the gastroscopist can be of great help. It is not infrequent for him to find that these patients are really suffering from lesions in the stomach. Most commonly he will find some form of gastritis. By the term gastritis he does not necessarily mean to infer that these lesions are inflammatory in nature. It may well be that in the future we will find that such lesions are on some other than an inflammatory basis.

Schindler² has classified gastritis into three main types. The most common form he has

called hypertrophic gastritis. These lesions are commonly found in patients with gastric complaints such as pain after meals, belching of gas and a general feeling of fullness in the stomach. Gastroscoically this form of gastritis is easily recognized. The rugæ are larger than normal and can not be wiped out by air pressure. They seem to be made up of numerous small nodules of mucosa with fine narrow valleys between them. Viewed in profile the mucosa assumes a velvety appearance. Very frequently this form of gastritis is accompanied by single or multiple small erosions which may vary in size from one to five millimeters in diameter. These erosions appear as shallow punched-out areas in the mucosa and look very much like small ulcers or canker sores. This form of gastritis is very common in patients who have been thought to be suffering from spastic colon or irritable bowel. In my own mind, I am not yet convinced that it may not be on a neurogenic basis. It is entirely possible that future study will reveal that it is not an inflammatory reaction at all. These patients do not seem to react well to any form of treatment. Despite rigorous ulcer or bland diet regime these lesions, although they may improve temporarily, do not seem to be permanently cured. The erosions, however, will disappear on rigorous treatment and will usually remain healed as long as the patient will remain on such treatment. We have had many examples of this type of gastritis in the last four years. Just recently, I saw a patient who for six years had been having epigastric pain coming on two hours after meals relieved by diet and in whom x-ray has been unable to reveal any signs of ulcer. Gastrosocopy revealed a localized hypertrophic gastritis rather high on the anterior wall with several small ulcerations ranging in size from two to five millimeters in diameter. He has been on an ulcer diet for two weeks but as yet he has not had complete relief from symptoms.

Atrophic gastritis is a frequent accompaniment of pernicious anemia although it may occur in the absence of this disease. Its recognition is very simple. Whether it is a result of an old hypertrophic gastritis or is a primary form in its own right is a debatable question. For the present we shall leave this as an open question.

That form of gastritis known as chronic

mucosal catarrh has been a very interesting entity. It consists of a superficial inflammation of the mucosa with marked discoloration of the mucosa and a dirty necrotic greyish exudate lying between the folds. It is commonly found in carcinoma of the pylorus with obstruction, passive congestion, and in some cases of gastro-enterostomy. We have found it to be present in the majority of those with gastric complaints following gastro-enterostomy. The symptoms of this lesion simulate those of ulcer and very frequently an erroneous clinical diagnosis of gastrojejunal ulcer has been made in such cases. This lesion improves markedly under a strict ulcer regime but is prone to recur with the slightest dietary indiscretion. I believe that the occurrence of this form of gastritis is one of the most serious objections to the use of gastro-enterostomy as a treatment for duodenal ulcer. Although it might be avoided by correctly planned gastro-enterostomy openings, it seems that even in the hands of excellent surgeons the operation is not infrequently followed by this lesion. In contradistinction to this procedure, gastric resection seems to produce much better results. In our series of cases, I have never seen chronic mucosal catarrh or any other form of gastritis in a resected stomach. I believe that this constitutes a strong argument for the use of gastric resections rather than gastro-enterostomy in the surgical treatment of obstructive duodenal ulcer. It may be that at some future date we will find this form of gastritis in a resected stomach but the indications at present are that it will be a rare condition.

Gastric ulcers are easily recognized. These lesions appear as round or oval punched out areas with white necrotic centers surrounded by reddened mucosa. This mucosa is not raised but remains on the same level as that around it and the rugæ radiate out from the margin. As healing occurs the ulcer fills in from below and from the periphery. The white necrotic center sloughs out and is replaced by granulation tissue. The edges become red and encroach upon the ulcerated area. When the ulcerated area becomes very small it is still surrounded by a ring of reddened mucosa. After the ulcerated area is healed, the mucosa in the area of the original ulcer may remain reddened for quite a long period of time. Should the healing process be in-

rupted the ulcer breaks down and the necrotic center again sloughs out. Gastric ulcer is, as a rule, easily diagnosed by the x-ray method. Nevertheless, we have been able to discover small ulcerations which were not picked up by the roentgenologist. It is obvious that small lesions 2 mm. in diameter could be easily missed if they should occur just off the lesser curvature on the anterior or posterior walls. We have also been able to demonstrate that a lesion which simulated a gastric ulcer on x-ray was in reality an outpouching of the stomach made up of entirely normal mucosa. Here again the x-ray silhouette could not be expected to differentiate between an ulcer with a deeply sloughed out center and a small outpouching of the stomach wall lined with normal mucosa.

Other inflammatory lesions of the stomach producing a scarring in the wall are frequently seen through the gastroscope. At times the mucosa over these areas is itself replaced by white scar tissue and on other occasions the mucosa is normal but the wall is stiff and distorted by scar tissue. Such lesions are often seen in the antrum associated with old duodenal ulcers which have produced considerable scarring in the adjacent tissues. At times the differential diagnosis between a gastric malignancy and such an inflammatory lesion is difficult on x-ray examination but the gastroscopist will as a rule be able to make the correct diagnosis.

Carcinoma of the stomach is usually correctly diagnosed by x-ray methods. Gastroscopically these lesions present a varied appearance. The lesions may vary in color from white to grey, blue or purple. They are raised above the normal level of the mucosa. The rugæ run up to this raised margin, which is as a rule markedly discolored. The ulcerations within the lesion are usually irregular in outline and as a rule show numerous bleeding points. Because of the difficulty in the x-ray examination of certain portions of the stomach it is occasionally possible to discover lesions by gastroscopy which were not found on x-ray examination. In one such case we were able to discover a lesion approximately 4 cm. in diameter which repeated x-ray exami-

nations were unable to locate. The patient was explored and the lesion was found to be present exactly as described on gastroscopy. Gastric resection was performed and the patient is alive and well at this time, sixteen months after operation. Although such cases are rare, an example such as this case illustrates the importance of gastroscopy when gastric lesions are suspected and a negative x-ray examination is obtained.

The patient with gastric hemorrhage presents an interesting medical problem. Although the most common sources of bleeding in the stomach are carcinoma and ulcer, we all have been confronted with cases which present negative x-ray studies in the face of serious gastric hemorrhage. Even exploratory laparotomy frequently fails to reveal the source of bleeding. With the aid of gastroscopy we have been able to find that a large number of such cases bleed from rather small gastric lesions. The most frequent source of such hemorrhages is a small erosion which may be pinpoint in size. Such erosions may be single or multiple. I have on numerous occasions seen a fairly copious stream of blood pouring from such a lesion. The presence of varices in the stomach and not in the esophagus constitutes another source of bleeding. We have seen four such cases in our series. At times hypertrophic gastritis bleeds very easily on the slightest pressure with the gastroscope. It is entirely probable that such lesions could easily bleed when food particles come into contact with them. I believe that in all cases of gastric hemorrhage for which no cause can be found, gastroscopy should be done as this method alone enables us to discover the source of bleeding. I do not feel that the presence of bleeding is a contraindication to gastroscopy.

Conclusions

Gastroscopy is a new and safe method of examining the stomach. It offers valuable additional information which can only be obtained by this method. In the field of gastritis it is the one reliable means of diagnosis at the present time.

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THE EXTERNAL USE OF ALOES

J. E. CREWE, M.D.

Rochester, Minnesota

IN 1935, Collins reported treating roentgen burns with the leaf of *Aloë vera*. About that time, I was interested in a case of palmar eczema. The lesions had been of long duration, had resisted every type of treatment and were painful and annoying. I obtained enough of the leaf for four applications, which I made on four successive nights. The leaves were split, the gelatinous surface applied to the palms and the material retained with bandages. At the end of the four treatments the lesions were healed and the patient had had no further trouble up to the time of the writing of this communication on December 20, 1936.

Further Clinical Experiences

Ointments are not generally used as surgical dressings but, in my experience, the results obtained and the ease with which the aloes dressings were removed, without adhering or causing pain, seem to be points in favor of their use. As will appear, I used not only an ointment of aloes, but also powdered aloes. These preparations were applied in the routine of a general practice and on empiric grounds only. The reports of results will be faithfully, if briefly, recorded.

Ulcers on Amputation Stumps.—I received a supply of the leaves from the Island of Aruba in the Dutch West Indies, and these I used in the treatment of several ulcers which had appeared, after amputation, on the stumps of the legs of a single individual. Because lymphedema had developed and the condition that was present resembled elephantiasis, amputation had been performed a second time, together with removal of some of the veins. The circulation in the stumps was poor, and in 1932 several large ulcers had developed. These had shown no inclination to heal under various kinds of treatment. On the left stump were three ulcers, one of which measured 5 by 13 cm.; the other two were about 3 cm. in diameter. On the right stump was a single, deep ulcer, also about 3 cm. in diameter. Within twenty-four hours after application of the leaf of *Aloë vera*, pain had practically disap-

peared and the edema was much reduced. The smaller ulcers healed in about two weeks, leaving practically no scar. The large ulcer made good progress but my supply of leaves became exhausted.

I had become much interested in the drug, and finding that the ordinary commercial powdered aloes was prepared mostly by natives, who dried the pulp of the leaves in the sun, I thought this sun-dried product might retain the properties of the fresh leaf. I obtained a supply of Socotrine aloes, the best grade of powdered aloes. This I made into an ointment with a lanolin base and applied it to the large ulcer. The relief from pain and healing continued about as it had done when the fresh leaf had been applied. However after several months there appeared to be little progress. I then discontinued this treatment and used hot packs, scarlet red ointment, balsam of Peru, calamine ointment and zinc oxide ointment, one after another. Healing not only stopped but the size of the ulcer seemed to be increasing. I returned to the aloes ointment and also applied powdered aloes; the latter seemed to be a little more effective than the ointment. At the present time* the large ulcer remains unhealed, and in the past few months has made little progress. It is now 5 cm. long and 3 cm. wide. Because of the bad circulatory condition, surgical treatment seems inadvisable.

Pruritus Vulvæ.—Seven cases of pruritus vulvæ have been treated and in all but two the results have been satisfactory and prompt. Of the two cases in which the results were less satisfactory, in one the condition was of long standing and an obstinate vaginal discharge was present. Also, in this case there was persistent perspiration of the groins; the perspiration appeared to be irritating and was difficult to control. This patient, although much improved after two months, is still under treatment. She has had much relief from the itching and the skin has a much better appearance than before. Nevertheless, the irritating vaginal discharge is refractory. In the other of these two cases progress has been

*Note.—August 11, 1937. The large ulcer has been completely healed for two months.

ow, but the condition has improved and the patient is still under treatment.

Of the cases of pruritus vulvæ, the following one was particularly encouraging. The patient was sixty-four years of age. The condition was very severe and the skin about the vulva and down the inner aspects of the thighs was thickened and purplish. Considerable treatment had been ineffective. The woman was in a highly nervous state and was unable to sleep. When treatment was begun with the aloes ointment, administration of sedatives was continued. The intense itching and burning was almost immediately lessened; in two weeks the skin had become practically normal in appearance and the irritation had been completely relieved.

Ulcers of Advanced Mammary Carcinoma.—A woman, eighty-six years of age, had a carcinoma of the left breast of one year's duration. Because of her age and for other reasons, the condition was considered inoperable. In March, 1936, a crater-like ulcer developed and became a little more than 3 cm. in diameter. The discharge was profuse and very foul-smelling. After various applications had been tried without effect, aloes ointment was applied. In a few days both the discharge and the odor were controlled. Odor could not be detected more than a few centimeters away from the lesion after removal of the dressing. The application was made on gauze and this was easily applied and easily removed twice daily. Granulation developed promptly and the crater-like ulcer became level with the surrounding tissue. This treatment was continued from the latter part of March until the patient died, December 11, of abdominal metastasis. During this time the tumor became larger and more nodular, but after the depression healed there was little change in the size or appearance of the ulcer.

Ivy Poisoning.—A pregnant woman twenty-two years of age had small lesions on the wrists caused by poison ivy. However, almost the entire inner aspects of both thighs were equally involved as to area and degree. The irritation in these areas was violent and inflammation and blebs caused much distress. A solution of potassium permanganate was applied to the right thigh and the woman was given some of the solution with which to continue treatment at home. To the left thigh aloes ointment was applied lib-

erally and the area was covered with gauze. The patient lived in the country, but she returned as directed on the second day. The lesions on the thigh that had been treated with potassium permanganate had somewhat dried but were still inflamed and very uncomfortable. The left thigh, to which aloes ointment had been applied only once, had caused but little discomfort and the skin was normal in appearance, with the exception of a little remaining moisture and redness where the blebs had been. The patient was given ointment for the right leg also and was not seen again until her confinement two weeks later. She stated that the condition of both thighs had cleared up promptly.

Burns.—A man, aged twenty-six years, had stepped into a pit containing boiling water emptied from a cooker in a canning factory. The injured foot and leg were scalded to within 8 cm. of the patella. Most of the outer layers of skin came off when the stocking was removed. Over the malleoli, burns extended through the entire integument. In a first aid station a proprietary ointment had been applied. In an effort to remove the ointment and dead skin, I applied, at first, warm, moist packs of solution of boric acid. On the following day, and thereafter, liberal applications of aloes ointment were made. The patient had little pain and the dressings were easily removed. There was no evidence of infection. In ten days there were no raw areas, although the skin looked thin, red and shiny. The patient was dismissed and returned to work on the nineteenth day after the accident.

In another case, in which a large area had been scalded, and in several cases of moderate burn, treatment and results were similar.

Other Conditions.—In addition to the cases cited, the ointment or powder was used in place of ordinary antiseptic substances in treatment of carbuncle, small infections and abrasions. In one case of "winter itch" also, a very dilute alcoholic solution was employed.

Unfavorable Effects in Three Cases.—In one case of ulcer of the leg in which aloes ointment was employed catharsis was present for one day. This may have been attributable to the aloes. Because of possible absorption, therefore, aloes probably should not be used on mucous surfaces, such as those of the vagina, except with caution.

Moreover, in two cases of psoriasis, there developed what appeared to be allergic erythema bordering the original patches. With the exception of these cases, I have not seen any untoward results from the use of the ointment or the powder.

Ancient and Modern Uses of Aloes

The drug has maintained a place in the history of medicine since the time of King Tutankhamen, 4,000 years ago. It was known to the ancient Egyptians, is mentioned in Arabian medicine, and was employed down through biblical times and the dark ages to modern times. Aloes is used but little at present in the United States, except by veterinarians; nevertheless in the Twenty-second United States Dispensatory six pages are devoted to it. In former times aloes was said to be useful in amenorrhea and as an abortifacient. It has long been used as a stimulant to the lower bowel in constipation and as a general tonic. It is mentioned as being useful in the treatment of abrasions, fissures, and so forth, and is a component in the official compound tincture of benzoin. Aloes was formerly used as an embalming agent and perhaps was one of the substances used by the ancient Egyptians in their now lost art of embalming. In the Bible, John 19, verses 39 and 40, is the following passage: "And there came also Nicodemus, and brought a mixture of myrrh and aloes, about an hundred pounds. Then they took the body of Jesus and wound it in linen clothes and the spices, as the manner of the Jews is to bury."

The fresh leaf of the plant is still used by the natives of various countries. The Seminole Indians in the Everglades of Florida use it for treatment of wounds and burns. A friend from South Africa reported to me that the natives there used the leaf for treatment of sores and wounds. Another friend has told me that he has often seen it used by the peasants in southern Italy for treatment of ulcers, wounds, and so forth, and that he himself has used it for severe sunburn with great relief.

The Plant and Its Preparations

The genus *Aloë* embraces about a hundred species, which grow from a few centimeters in height to plants 6 meters high. The leaves of *Aloë vera* somewhat resemble the leaves of the century plant. They are about 40 cm. long and

are dark green; sometimes they are mottled with brownish spots. The leaves are flat on the upper surface and convex on the under surface and the margins are armed with reddish thorns. The base of the leaf is about 1.5 cm. thick. The integument is thin and fibrous and the interior of the leaf is filled with a gelatinous substance resembling lemon gelatin.

The plant grows widely in warm countries. It is found wild and is cultivated in countries bordering the Mediterranean Sea and in India, Africa, China, and the Islands of the Indian Ocean. It is cultivated in many of the islands of the West Indies, especially in Barbados, Curaçao and Aruba, and it is found in Mexico and Florida. I have not seen mention of its cultivation in any of the Pacific regions.

The various commercial products are named principally from the localities where they are produced. Socotrine aloes, made principally from the species *Aloë perryi*, but also from *Aloë vera*, comes from the Island of Socotra in the Indian ocean. Barbados and Curaçao aloes are produced mostly from the species *Aloë vera*, which is grown on various islands in the West Indies. There are many other kinds of aloes which are known by the following descriptive adjectives: "Cape," "Natal," "Zanzibar," "Aganda" and "Crown." Besides the preparation from *Aloë vera* and *Aloë perryi*, a number of preparations, mostly inferior, are made from other species and are official in the United States Pharmacopeia.

Because commercial aloes, it is said, is prepared principally by natives, who remove the jelly-like interior of the leaves and dry it in troughs or other containers in the sun, it often contains much foreign matter. For this reason, in the United States Pharmacopeia it is advised that a purified aloes be made by dissolving the powder in alcohol and then straining and drying the filtrate. I have used the crude powder, as I said before, because I thought some of the properties might be impaired by the alcoholic treatment.

Owing to the fact that there are so many varieties of commercial aloes, it seems possible that the results may not always be uniform. The material I have used has been the best grade of Socotrine aloes, and the results have been fairly uniform. The ointment which I made contains 1 drachm (4 gm.) of powdered aloes and 1 drachm of calamine to the ounce (30 gm.) of

white petrolatum. The calamine forms a sort of paste and makes the ointment more adherent. The dusting powder which I also have said that I used in some cases, has not caused any irritation or other undesirable effects.

Summary

The fresh leaves and the aloes ointment and the powder appear to have the following properties: 1. They relieve pain, burning and

itching. 2. They have some sort of antiseptic action. Infected lesions quickly become clean and exude little or no pus. 3. They seem to stimulate rapid granulation and formation of new tissue so that denuded areas appear to heal more rapidly than with other agents. They are effective in eliminating the foul odors that accompany infection of broken down carcinomas, ulcers and so forth.

CASE REPORT

A CASE OF MALARIA DEVELOPING IN MINNESOTA*

JAMES F. WEIR, M.D.

Rochester, Minnesota

ALTHOUGH malaria remains endemic in our southern states, and in the past has occurred frequently in the states on the Mississippi River and its tributaries, it seldom has been encountered in Minnesota in recent decades except among transients from areas where the disease is endemic or among patients with paresis who have been artificially inoculated for therapeutic purposes. However, with modern methods of rapid transportation, such as the automobile and aeroplane, the possibility of transportation of infected mosquitoes must be considered from a public health standpoint. Furthermore, it is known that anopheline mosquitoes exist in Minnesota. Because of these facts, it has been thought advisable to record the following case of malaria developing in a native Minnesotan.

A man, aged twenty-one years, came to The Mayo Clinic on June 2, 1937, from his rural home at Minniska, Minnesota. He had always lived in Minnesota and never had been out of the state farther than Alma, Wisconsin. He had had pneumonia in 1933 and had been operated on for acute appendicitis in 1935. Several months before he came to the clinic, the cervical lymph nodes on the right side had enlarged somewhat but this enlargement had subsided. Since December, 1936, he had had three or four mild chills, profuse perspiration, malaise, and slight fever, occurring in the evening. The following morning he had felt normal

except for some weakness, which had persisted for two or three days. About four weeks before his admission at the clinic he had had almost daily chills, lasting from twenty minutes to two hours, followed by drenching sweats. These had been associated with severe aching of muscles and bones, headache, and fever as high as 104° F. General malaise had been marked. The patient's weight had decreased from 147 to 124 pounds (67 to 56 kg.) and he had lost much in strength. He had been in a hospital near his home for one week where, he stated, a tentative diagnosis of malaria had been made and he had been given some medicine. He then had been at home for two weeks, during the first of which he had had a mild chill every second day, followed by slight fever. Because of continuation of these symptoms, he stated that his physician then had questioned the diagnosis of malaria.

The day after the man came to the clinic he had a chill, followed by a temperature which he said was 103° F. He was not under observation at the time when he had this temperature. Physical examination gave evidence of moderate loss of weight; the right cervical lymph nodes were palpable and the spleen was readily palpable. During the period he was under observation the highest temperature reading was 99.2° F. Various laboratory examinations gave normal or nearly normal results, until, on June 10, study of thick smears of the blood disclosed the presence of a plasmodia. On a subsequent smear, typical ring forms of *Plasmodium vivax* were identified, although they were very few. Atabrin, one tablet, three times a day, was administered for five days, and the patient was instructed to take a second course of the same treatment in from one to two weeks.

*From the Division of Medicine, The Mayo Clinic, Rochester, Minnesota.

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BUSINESS MANAGER

J. R. BRUCE

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Dr. George H. Simmons

WITH the death on the first of September of Dr. George H. Simmons, former general manager of the American Medical Association and editor of *The Journal*, came the end of a long and influential career, closely associated and largely responsible for the remarkable growth in influence of our national medical organization. His crusader-like and vigorous attack on fraud which was manifest in the nineties when he practiced in Lincoln, Nebraska, and which led to the recognition by the Chamber of Commerce of that city of the debt owed him, was continued during his association with our national organization. His extraordinary literary ability which he used at an early age in obtaining his education was devoted to the national journal during his editorship.

After careful deliberation the Board of Trustees chose Dr. Simmons to be General Secretary and Editor in 1899. When he retired in 1924 he had been editor for twenty-five eventful years of the Association's existence. It was he who instigated the reorganization of the Association and the adoption in 1901 at the meeting of the Association in Saint Paul of a new and more representative constitution. His regime saw the formation of the Council on Medical Education and Hospitals, the Council on Pharmacy and Chemistry, the beginning of the publication of the *Quarterly Index*, the *American Medical Directory*, and the various *Archives* to supplement *The Journal*.

It is not surprising that, in his vigorous and continuous attack on fraud, he became the butt of much abuse. Doubtless his refusal to reply to unjust criticism gave the impression in some quarters that "silence gives consent." The record of progress made in medical organization, education and publication during his incumbency and the part he played in instituting many new activities and reforms speak for themselves.

Poliomyelitis in Minnesota

ACCORDING to the latest reports of the poliomyelitis situation there has been a widespread increase in incidence this year, especially in California, Texas, Oklahoma, Louisiana, Mississippi, Alabama, Arkansas, Tennessee and North Carolina. At the same time a considerable number of cases have been reported in Massachusetts, New York, Ohio, Indiana, Illinois, Michigan, Kansas and Nebraska.

Each year a certain number of cases is reported in Minnesota. This year three cases were reported in January, one in February, one in April and one in June. From July 1 to September 11 a total of 159 cases was reported, thirteen with first symptoms in July, fifty-six in August and ninety up to September 11, only one of these outside of Minneapolis, Saint Paul and Duluth. A comparison of the number of cases so far this year with the total number in Minnesota in recent years is interesting. In 1925 there were 955 cases with 145 deaths; in

1930, 479 cases with thirty-seven deaths; in 1931, 811 cases with sixty-six deaths; in 1932, 124 cases with ten deaths; in 1933, 383 cases with thirty-seven deaths; in 1934, 113 cases with twenty-one deaths; in 1935, 99 cases with ten deaths.

When all the evidence is summed up, the profession still has little to offer in the prevention or cure of poliomyelitis. Its occurrence is not restricted to limited areas, and often a large number are isolated cases. The peak of an epidemic is generally reached about the middle of September, the exact time following the opening of the schools when one would expect the epidemic to increase rather than diminish, showing that poliomyelitis does not behave like most contagious diseases.

Last month we referred editorially to Dr. Armstrong's report of the failure of nasal spraying with picric acid and alum in preventing infection. Recently Dr. Armstrong has called the attention of the Minnesota State Board of Health to the fact that, while nasal sprays are very effective in preventing infection in animals, application of any medication with an ordinary atomizer fails to reach the required area. Even Dr. Peet's method of inserting an atomizer tip above the middle turbinate is not practicable in young children.

The use of zinc sulphate solution as a nasal spray, too, is entirely experimental. Reactions are frequently so severe that the carrying out of the prescribed two successive daily treatments and repetition at intervals of two weeks is likely not to be consummated. The Minnesota State Board of Health takes the stand, and it seems to us rightly, that as long as the experimental studies on human beings have not proved the value of nasal sprays in the prevention of poliomyelitis and since there is some danger associated with their indiscriminate use, the Board does not recommend them.

In regard to active treatment of poliomyelitis there has been much difference of opinion. Our State Board of Health has never been very enthusiastic about the value of convalescent serum although it has made it available in recent years. As a result of the work of Dr. Park in coöperation with the New York City Academy of Medicine, reported in 1932, and again in more detail by Fischer, and also that of Kramer, Aycock, Solomon and Thenebe, the State Board of

Health has gradually withdrawn from this activity and this year has not procured or distributed convalescent poliomyelitis serum. A critical evaluation of the results of serum therapy by Harmon which appeared in the *American Journal of Diseases of Children* in 1934 and a report by Rosenholz at our State Association meeting in 1933 both failed to demonstrate that the serum has any value in the preparalytic stage. It has been given largely in the hope it would be of benefit.

Oculists and Optometrists

THE medical profession and particularly oculists have recognized for some years the part that ignorance on the part of the public as to the difference between an oculist and an optometrist plays. It is safe to say that many people do not know that many optometrists who call themselves doctors on the basis of their D. O. diplomas are not doctors of medicine. They do not know that the majority of optometrists are not competent to detect diseases of the eye from which a large percentage of their patrons are suffering.

Inasmuch as the medical profession in general and oculists in particular are open to the accusation of bias when they attempt to publicize the present situation, the article entitled "Optometry on Trial" by Roger William Riis which appeared in the August number of the *Readers' Digest*, written not only by an M.D. but by one presumably unprejudiced, should therefore be of some value. Certainly it produced a reaction on the part of optometrists and oculists as presented in the September issue of the same magazine.

The article is based, not on preconceived ideas, but on the results of an investigation in which some six individuals consulted optometrists from Boston to the Rockies and in which some \$1,500 worth of glasses were purchased. The results are rather astounding. A girl with normal vision only on one occasion was told she needed no glasses. One individual suffering from glaucoma, iritis and squint was not once correctly diagnosed, and less than half the glasses prescribed were ground according to prescription.

According to the article there are 22,000 optometrists in the country and they sell \$75,000,000 worth of glasses a year. It was found that

88 per cent of those investigated offer free examinations and thus have to furnish glasses to make any profit. It is no wonder that to the commercial element among the optometrists the temptation to prescribe unnecessarily or to neglect to refer to an oculist those whom glasses do not correct is often too great.

The question arises, is optometry a profession or a business? The fact that most optometrists advertise and use all possible means to promote sales indicates they are for the most part business and not professional men. If optometry is a profession it is necessary for their organization to clean house.

It is true that the average physician knows little or nothing about refracting eyes, but is content to refer such patients to oculists. It is also true that optometrists know little or nothing about eye diseases, and, unless they can recognize glaucoma, iritis, cataract and optic atrophy, a distinct danger to the public exists in the situation.

The more publicity on the subject, the better for the public. Then when an individual's attempt to economize by saving the oculist's fee results in no improvement of vision, he or she will suspect some eye disease and consult an oculist.

In Memoriam

John J. Gelz
1883-1937

DR. JOHN J. GELZ, well known eye, ear, nose and throat specialist of St. Cloud, died June 26, 1937, following two years of retirement from active practice.

Born in St. Joseph, Minnesota, March 3, 1883, the son of John Francis and Carolina Haarman Gelz, who came to Minnesota with their parents at the time of the Civil War, Dr. Gelz was left an orphan by the death of his father in 1887, and he and his three sisters were reared by his mother.

Dr. Gelz attended school in St. Joseph and later the East Side High school in Minneapolis, where he graduated in 1904. He attended Hamline University and received his medical degree from the University of Minnesota in 1909. His internship was served at St. Joseph's Hospital in Saint Paul, and at St. Mary's in Minneapolis.

Beginning practice in Buffalo, Minnesota, Dr. Gelz moved after two years to Richmond, where he engaged in general practice for ten years. In 1921 he studied in Vienna and London and also took four months additional training in New York to prepare himself for eye, ear, nose and throat work. Following this he located in 1923 at St. Cloud. In 1927 Dr. W. T. Wenner became associated with him and in 1936 Dr. J. B. Gaida joined them.

Dr. Gelz was a Fellow of the American College of Surgeons, the Minnesota Academy of Ophthalmology and Otolaryngology, the Stearns-Benton County and the Minnesota State and American Medical Associations. He was also an honorary member of the St. Cloud Rotary Club, of which he was a past president. He was at one time president of the Stearns-Benton County Medical Society, and also of the St. Cloud Hospital staff.

Dr. Gelz married Catherine Wenner of Richmond on June 20, 1916. He is survived by his widow and three sisters.

Alexander Ridgway
1855-1937

DR. ALEXANDER RIDGWAY died at his home in South Haven, Minnesota, April 3, 1937, at the age of eighty-one years.

He was born in Columbus, Wisconsin, July 28, 1855. As a young man he left Columbus and went to Minneapolis, where he studied medicine at the Medical Department of Hamline University, from which he graduated in 1894. He located at Belgrade, Minnesota, where he practiced until 1929, when he moved to South Haven and continued the practice of medicine there until his last illness.

July 8, 1896, he was united in marriage to Miss Lena Hanson of Minneapolis. Two children were born to them, Russel of Minneapolis and Mable of South Haven. Dr. Alex was a member of a family of well known physicians, two of whom, Dr. Joseph Ridgway of Minneapolis and Dr. Alfred M. Ridgway of Annandale, survive. Dr. Alex Ridgway was a member of the State Medical Society and the Stearns-Benton County Society, and of the Masonic Woodmen, and Royal Neighbor lodges. He served several terms as Mayor of South Haven.

Dr. Ridgway was a man of exemplary habits and fine character and will be greatly missed in the community which he served and by his professional brethren who best knew him. He was an example of the rapidly thinning ranks of those pioneer country doctors who were forced to contend with the hardships of medical practice in rural districts in the olden days when the automobile and good roads were unknown, one who devoted his life to the service of the sick and afflicted of his community and of whom it may well be said that during his long professional career "He truly built many fires in cold rooms."

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

They Did Not Pass

Compulsory Sickness Insurance legislation was introduced in several state legislatures, including New York, Pennsylvania, and Wisconsin, during the last session. They failed in each.

It is rumored in informed quarters that Senator Robert F. Wagner of the state of New York plans to introduce a bill for compulsory sickness insurance in Congress at the next session. The rumor gains color by the fact that the Senator's son, Robert F. Wagner, Junior, introduced such a bill into the New York State Legislature and failed to secure passage of it at the last sessions.

It is also reliably rumored that the President himself is indifferent if not actually opposed to any move for socialization of medicine at present.

Tax Status

The tax status of state medical associations under the Social Security Act and under the income tax provisions of the Federal Revenue Acts is not made any clearer by decisions already handed down in Washington. According to a reliable report, four large state associations have been declared liable and four others, large too, and apparently engaged in the same general type of program, have been declared exempt.

Minnesota's status has not yet been determined.

Note on Osteopaths

It is rumored that an attempt will be made at the next session of Congress to give full rights to practice under the United States Employees Compensation Division regulations to osteopaths.

Osteopaths in Kansas are bringing action on appeal before the courts to determine whether

or not they have the right to be registered under the Harrison Narcotic Act.

In that connection it is interesting to note, also, that Delaware and South Carolina have granted separate Basic Science Boards for Chiropractic.

No Pedicurists

This question is being asked: What is a chiropodist?

The chiropodists themselves want an official definition. They emphatically do not want a chiropodist to be synonymous with a pedicurist. It is their contention that theirs is a medical specialty which licensed physicians could but certainly do not practice. In Minnesota chiropodists are licensed to practice under the law.

Hypnotics

Laws forbidding the sale of hypnotic drugs except upon the prescription of a physician have been passed in Rhode Island and South Carolina. In Maryland the law has been amended to instruct physicians specifically to write prescriptions in calling for these drugs.

In Texas, on the other hand, a law limiting the sale of hypnotics has been repealed.

Ante-Nuptials

Of interest to physicians, also, is the fact that ante-nuptial examinations for syphilis and gonorrhea are now required by law in Illinois and Michigan. In New Hampshire a new law requires examinations for syphilis alone. In Oregon a law requiring examinations of bridegrooms, alone, has been amended to apply to both partners.

Thousands for Cancer

The National Cancer Institute was created by the last Congress with an appropriation of \$750,000. Medical observers are hoping that this money may never be used to line pork barrels.

The plan of the Surgeon General to distribute it among already established institutions of research has their hearty approval.

New Quirk in Food and Drugs

S1077 is the number of the Wheeler-Lea bill, latest chapter in the long and, so far, futile effort to secure passage of new and up to date food and drug legislation. The latest bill which is apparently to be pushed at the next session calls for control of all advertising other than labelling for drugs and therapeutic devices.

The new quirk in this bill lies in the fact that it proposes to take enforcement away from the Department of Agriculture and give it to the Federal Trade Commission. The reason for this change is not clear, inasmuch as the Department of Agriculture is obviously equipped in experience and facilities for the task, while the trade commission is not. The possibility that such a change might open the way to undesirable political manipulation should not be overlooked.

Department of Public Welfare

A department of Public Welfare is still considered imminent in Washington. It is altogether likely, according to report, that the plan for reorganization of Federal offices will call for such a department. The gossip is that Harry Hopkins will be the department head.

In the meantime physicians have not changed their opinion that health activities of the federal government should be independent of social welfare and a qualified physician should be in charge.

Too Bad, Mr. Senator!

In June, Senator James Hamilton Lewis of Illinois rushed to Atlantic City to seek the advice, so he said, of the House of Delegates of the American Medical Association.

He was afflicted on behalf of his professional brethren in medicine.

He detected a new attitude in Washington and all over the country. The doctors would be obliged to accept a new interpretation of their position and responsibilities. He wanted to warn them.

Were they prepared to cope with this new interpretation: to protect scientific standards and fees in the face of it?

The Senator spoke as one upon whom an unpleasant duty had been forced against his will. He was the reluctant bearer of tidings.

True to his forebodings, a resolution embodying his worst fears was introduced in July into the Senate. In it the doctors were definitely ranged as civil servants, responsible to the government rather than to their patients, for the well being of the citizens. A system of federal medicine for the indigent and the low income groups was proposed with fees to be paid to the doctors by the Social Security Board.

The Senate was preoccupied with the Court bill and other matters, and took no action on the resolution.

The interesting thing to the doctors was that Senator Lewis, himself, introduced the distressful resolution.

What pain and embarrassment it must have caused the distinguished statesman! Remembering his sensitiveness as it was exhibited on the platform at Atlantic City, the doctors will have every sympathy for the violence which introduction of this resolution must have done to his finer professional feelings.

Sickness Insurance - Washington, D. C.

A new experiment in sickness insurance started in a strategic quarter last month.

It may or may not be—as some people believe—the first move in a quiet, administration-supported move to advance a federal program of sickness insurance as part of the general plan for Social Security.

This new experiment was introduced in Washington, D. C., for the 2,000 employes of the Federal Home Loan Bank Board and other agencies such as the Home Owners' Loan Corporation which come under the direction of the Board.

Clinic

According to a recent issue of the *United States News* a fully equipped clinic is being established in Washington under the direction of Dr. Henry R. Brown, Chief of the Tuberculosis Division of the Veterans' Administration. A staff of about 15 is to be hired for the clinic, including six or seven physicians.

Men with families will receive medical service for themselves and their families for a payment

\$3.30 a month. Single persons will receive the same benefits by paying \$2.20 a month.

Members Have Choice

The service will include complete physical examinations and necessary medical and surgical care with certain important exceptions, together with hospitalization in a semi-private room for three weeks during a single illness, nursing and ambulance services.

Members of the association who do not care to patronize the clinic doctors may have the physicians of their own choice.

The exceptions noted include surgery of the brain and nervous system and any additional treatment after the medical director recommends confinement in an institution for mental, tuberculous, drug or alcohol addiction cases. Members are to be required, also, to pay for medicines, drugs, surgical appliances and orthopedic devices, eyeglasses and hearing aids. They are to pay, themselves, for radium and deep x-ray treatments; dental work; oxygen tanks or tents or materials; blood transfusions and special nursing service, unless the latter is ordered by the director.

To Encourage Prevention"

The usual objectives and justifications are offered: to encourage prevention of illness by making prompt medical care available at all times without extra charge; to reduce costs to beneficiaries.

The sponsors for the plan hold out a blithe hope that illness in the group will be cut by one-half.

Experience with group sickness insurance does not always bear out this sanguine hope.

Doctors Should Watch

That the whole project deserves close watching by physicians goes without saying. If it is popular, extensions to other government departments are almost inevitable. Government services outside of Washington will undoubtedly find assistance among other facilities of the Veterans' Administration for the development of the service. The possibilities are enormous.

The responsibility of the medical profession now lies in careful scrutiny of the quality of service available and of the costs in proportion to the amount. If the plan shows the weaknesses that such plans have shown elsewhere

the facts should be pointed out promptly and decisively and before the project grows to unmanageable proportions.

Before the Court

Monthly Editorial Prepared by the Medical Advisory Committee

A speaker at a recent medical meeting emphasized certain points in the appearance and conduct of a doctor in court cases which your Medical Advisory Committee believes should be stressed to the membership of our Association.

1. *Dignity of Manner.* A medical man is a marked individual in a court room. A "don't care" attitude is not good. A frightened one gives a smart lawyer his chance, but a cool, calm demeanor with a "Be yourself" bearing makes for ease under most unusual and trying circumstances.

2. *Simplicity of Words.* This comes from the application of common sense born, possibly, of experience and the ability to stick to the truth at all times. One should "know his stuff" and "say his piece" simply but convincingly.

3. *Preparedness.* Preparedness means a complete history of the case in point, unaltered in wording, as made at the time of examination, not embellished by superfluous thoughts or unnecessary findings—a history truthful and reliable which will convince the Court that the testimony being given is right and for the purpose of getting at the truth in the case so that the correct decision may be reached by judge or jury.

4. *Explain: Do Not Argue.* Be explicit in answer to questions, intelligent in explanation of contested points, and kind in demeanor to the witness on the opposite side of the question. An argumentative attitude makes one a mark for sharp questioning and ridicule.

When you are right remember you can afford to keep your temper. When you are wrong you can't afford to lose it.

The medical witness can well keep in mind that dignity, simplicity of words, thorough preparedness and a non-argumentative bearing are the qualities best suited to inspire and command respect in Court as well as elsewhere.

Review From Russell Sage

The latest non-medical review of the medical situation in America is called "Physicians and Medical Care." It is a compact little volume prepared by Esther Lucile Brown of the Department of Statistics of the Russell Sage Foundation and published by the Foundation.

The book contains much universally accepted fact and just observation of course. It leads to a conclusion, however, which is worth quoting for the benefit of physicians because it is in agreement with the thought of most non-medical writers on the situation.

Says Miss Brown:

"If the problem of the nineteenth century was that of initiation of better medical schools and of concentration upon the basic sciences, the problem of the twentieth century is that of devising ways and means whereby adequate care can be provided for the entire population and physicians be compensated fairly for the service rendered. This is primarily an economic problem in which both physicians and society are involved, for both have much at stake. . . .

"Thinking Has Shifted"

"Various experiments such as those in the field of voluntary health insurance that have already been recorded, look toward a partial solution of a pressing need. Studies of compulsory health insurance and extension of state-supported medical services point to other ways of making care more widely available. It is evident that thinking has shifted in the direction of the needs of the masses and the demands of society become increasingly more exigent. Regardless of the attitude of those physicians and medical societies who would preserve the status quo, there are a great many individual physicians, members of health services and lay persons concerned with questions of health who believe that change is imminent and that only through change can there be progress.

A Call For Pioneers

"That serious difficulties confront those who seek to devise a means for extending medical care to the entire population while still preserving all that is best in medicine cannot be denied. . . . But the importance of finding a solution is commensurate with the difficulty involved. The challenge that confronts them has been well described by Dr. Henry Sigerist, who insists that American Medicine stands, at the crossroads. By unremittingly purposeful effort it has equipped itself with hospitals, laboratories, schools and well-trained physicians. At present it is faced with the greatest task of all, that is, putting this artfully fashioned apparatus to work in such a way that all the people may receive medical care. 'It is an enormous problem, requiring a great deal of courage; for it is a question of treading on new ground, of going

along untried paths. A new frontier has been opened and calls for another generation of pioneers.'"

He Fears a Monkey Wrench

In this connection it is interesting to glance again over the mass of frank opinion from the physician pioneers themselves as it has been so effectively collected in the two volumes called "American Medicine," recently published by the American Foundation.

Here is one opinion, picked at random, that is to the point and typical of a considerable section of these published observations.

"... Intelligent physicians are now seriously concerned and strenuously laboring over the economic problem and I think they should be allowed a decent opportunity to give their various experiments intelligent tryouts. Properly qualified medical groups have adequate brains, unlimited energy, and the finer motivation necessary to solve the problems that confront them. They are peculiarly well equipped for the effort and I am all for letting them have the field. . .

"Of course, I may be unduly optimistic but I would rather maintain that frame of mind than to suffer the possible chagrin incident to the monkey wrench thrown into the machine by agencies less well equipped than is medicine herself to meet these problems. It will not be in the nature of a jeopardy of any sort, at this stage of the game, to follow the good old Italian counsel of *festina lente*. We Americans are all too prone, when things go badly, over a long enough period of time, to develop a frenetic energy that is bound up with the risk of making bad matters worse."

"A Good Fight"

From the *New York Medical Week*:

"Pennsylvania physicians are letting no grass grow under their feet in the fight against compulsory sickness insurance. Although President Roosevelt has invited the A. M. A. to help formulate a federal health policy in accord with professional principles, there is little doubt that an attempt will be made to amend the Social Security Act to include health insurance. Keystone State doctors are taking no chances!

"As in New York, 'On the Witness Stand' has been widely distributed to the laity to explain the fallacious theory and mischievous workings of compulsory health insurance. To the same end, 50,000 employers and workers have been circularized with a leaflet showing what obligatory sickness insurance would cost them. Physician-canvassers employed by the Pennsylvania Society, independent medical and allied professional organizations and individual practitioners are carrying on education activities along similar lines.

"To convince legislators of the force of popular sentiment against compulsory sickness insurance, 10,000 petition forms have been sent to physicians throughout

state. Every practitioner has been urged to secure signatures of five voters in his locality. Public opinion, mobilized in this fashion, rightfully exerts strong influence on legislative assemblies.

"The situation in Pennsylvania is essentially no different than in New York or any other state. Let compulsory health insurance get a foothold in one area, and it will spread like wildfire through the Union.

"In its lively campaign against obligatory sickness insurance the Pennsylvania profession is living up to the old adage that an ounce of prevention is better than a pound of cure. Its methods hold a valuable lesson for the profession because they can be employed by individual practitioners as well as organized groups."

Wisconsin Meeting

The Minnesota State Medical Association is in danger of losing its title, hitherto unchanged, to the best state medical meeting in the United States.

Wisconsin, with its splendid 96th meeting, held in Milwaukee in September, is runner-up. Michigan meeting at Grand Rapids, September 7 to 30, is said to be planning the biggest meeting of its history.

The clear trend among state societies is toward a concentration of their energies in a large meeting with a special emphasis upon its values as a rallying point for all who are legitimately concerned in the care of the sick and with a special emphasis, also, upon its values for public health education.

The Wisconsin meeting was unique for its Hall of Health, a splendid collection of exhibits which the public was invited to visit. It was reliably estimated that more than 105,000 people visited the hall, studied exhibits on cancer, tuberculosis, heart and other conditions that depend upon a better public cooperation for their control. Scientific and technical exhibits were separately housed, and attracted, together with the distinguished program of lectures and round table discussions, a registration of some 1,850 physicians.

Minnesota men on the program included Dr. Arthur Myers, University of Minnesota; Dr. F. C. Rodda, Minneapolis; Dr. F. A. Willis, Rochester; Dr. Owen Wangenstein, Minneapolis; Dr. Edward T. Evans, Minneapolis. A fracture exhibit by Dr. M. S. Henderson, Dr. H. W. Meyerding, Dr. R. K. Ghormley and Dr.

H. B. Macey of Rochester, was a feature, also, of the scientific exhibit section.

Dr. J. H. J. Upham, president, and Dr. Irving Abell, president-elect of the American Medical Association, and the distinguished medical writer Dr. Logan Clendenning, all present as guest speakers, expressed themselves as enthusiastic about the meeting and particularly about the Hall of Health.

Pentobarbital Sodium-Abbott (Nembutal) Omitted from N.N.R.

The Council on Pharmacy and Chemistry reports that the Abbott Laboratories has decided to market its brand of pentobarbital sodium under the name of "Nembutal." The Abbott Laboratories profess themselves entitled to the commercial monopoly of a proprietary name for this substance on the basis of discovery. They concede that they were not the discoverers of the free acid, but they contend that they discovered the novel therapeutic qualities and were the first to publish these. These qualities are nothing new in kind, for they are the same as those known for other similar barbiturates; the chief difference is that the action is briefer than that of some others, but this again is not fundamentally new, since it is merely a step in the gradation of action of the numerous barbiturate derivatives. However, it happened that, before the discovery was published by the Abbott Laboratories, it had also been made independently by another firm, Eli Lilly & Co.; and the only discovery of anything at all novel, the brief duration of action and its importance, did not originate from either of these firms but in the University of Wisconsin. It is true that the Abbott Laboratories published their work shortly before Eli Lilly & Co. It does not appear clear, however, that the public interest would be served by basing a monopoly merely on the date of publication. In view of these considerations, it appeared to the Council as definitely against the public interest to concede to the Abbott Laboratories, a monopolistic name for this product, which they did not invent, the chief actions of which were not new, and of which they had not been the sole investigators. The Council therefore gave to the substance the non-monopolistic name "Pentobarbital," based on its chemical characteristics; but in order to allow the Abbott Laboratories ample time for adjustment, it extended to them for a year the privilege of using the name "Nembutal," which they had copyrighted as a synonym. Later the Council extended the period for six months additional; but now that the period has expired, the firm informs the Council that it will return to the use of the copyrighted name. Under the circumstances, the Council can only withdraw its acceptance of the Abbott Laboratories brand of pentobarbital sodium, while continuing its acceptance of the Lilly brand. (J. A. M. A., August 14, 1937, p. 504.)

UNIVERSITY OF MINNESOTA—CENTER FOR CONTINUATION STUDY

PROGRAM ANNOUNCEMENT, 1937-1938

THE Center for Continuation Study of the University of Minnesota announces the program of medical seminars for 1937-1938. The faculty will be selected from the Medical School, Graduate School, Mayo Foundation, and General Extension Division, and will also include distinguished teachers from other medical centers. Lectures will be given in the class rooms of the Center, and clinics and demonstrations in the Medical School, University of Minnesota Hospitals, and affiliated institutions.

Each seminar will occupy the full time of the graduates from Monday to Saturday, inclusive. There will be no evening classes. Special library facilities for each seminar will be provided at the Center. If the interest warrants, lecture, clinic and demonstration mimeographed outlines will be sold for a nominal fee after each week's program. A special feature will be round table conferences at the close of the daily program to give the graduates an opportunity to ask questions.

Studies in Adult Education indicate that the most effective instruction is given by concentrating on limited fields. For this reason the program of each seminar will include only the subject material announced in advance. Also, the best results are apparently obtained from repeated exploration in a single field of knowledge with opportunities to apply this knowledge between seminars in the regular practice of the postgraduate students. Until this method is demonstrated to be inferior to courses of greater length the University will continue to offer one-week seminars for physicians in active practice. Advanced classes will be formed for those seminar groups that desire it, provided the enrollment is sufficient and a suitable time for all concerned can be arranged.

Living Accommodations

The Center is located in the heart of the main campus of the University of Minnesota in Minneapolis. It is used exclusively for postgraduate instruction of men and women. Erected in 1936 at a cost of over \$300,000, it is said to be the only educational unit of its kind in the United States. Containing living accommodations for

78 persons, it may be used simultaneously by several professional groups. Postgraduate physicians should plan on living in the dormitory of the Center. A double room with bath is \$6.25 a week for each person; a single room without bath is the same price. Ample bathroom facilities on each floor are provided for those who select rooms without baths. Meals in the Center dining room are priced as follows: breakfast 35 cents; luncheon, 45 cents; and dinner, 65 cents. Members of the physicians' families are welcome at the same rates. A large parking garage is in the basement; the daytime rate is 20 cents, and 24-hour parking is 50 cents.

Tuition

The tuition for each course is \$25. This does not include living accommodations. In order to register for a seminar a fee of \$3 should be sent in advance. This payment will be applied on the \$25 tuition fee when registration is completed. In case the registrant fails to complete his registration the advance payment of \$3 will be applied on the tuition for any future seminar. The right to cancel any course because of insufficient registration is reserved by the University, in which event the registration fee will be returned if desired.

Certificate

A certificate of attendance will be issued by the University of Minnesota upon recommendation of the chairman of the seminar committee and the director of the Center for Continuation Study.

Registration

Any licensed physician who is a member of his local or state medical association or of the American Medical Association may register for the seminars. Physicians residing outside the state are accepted on the same basis as Minnesota physicians. All physicians should register as far in advance as possible. This will give the chairmen of the seminar committees an opportunity to plan for the special needs of those who will attend. This planning has been an important factor in the success of the programs presented previously.

COURSES FOR MEDICAL GRADUATES

Clinics, Lectures and Demonstrations

Surgical Diagnosis and Treatment

November 1-6, 1937

A series of correlated presentations on the diagnosis and treatment of surgical conditions, mainly acute, but not including fractures and dislocations.

O. H. WANGENSTEEN, Professor and Head of the Department of Surgery, Medical School, and Associates.

Dermatology and Syphilology

December 6-11, 1937

The diagnosis and treatment of syphilis and the more prevalent diseases of the skin for those who encounter problems in these subjects in their practice.

HENRY E. MICHELSON, Professor and Director of the Division of Dermatology, Medical School, and Associates.

Ophthalmology and Otolaryngology

January 16-21, 1938

Studies of diseases of the eye, ear, nose and throat, including special conferences, the subjects to be selected by a survey of the prospective graduate students.

FRANK E. BURCH, Professor and Head of the Division of Ophthalmology; Horace Newhart, Professor and Director of the Division of Otolaryngology, Rhinology, and Laryngology, Medical School, and Associates.

Medical Diagnosis and Treatment

February 7-12, 1938

Diseases of the blood and blood-forming organs, gastrointestinal and respiratory tracts, and selected topics from other medical fields.

J. C. MCKINLEY, Head of the Department of Medicine, Medical School, and Associates.

Traumatic Surgery

March 7-12, 1938

The diagnosis and treatment of injuries, including fractures and dislocations.

WALLACE H. COLE, Professor and Director of the Division of Orthopedic Surgery, Medical School, and Associates.

Endocrinology

April 4-9, 1938

Present-day knowledge of the anatomy and physiology of the endocrine glands, clinical types of disorders, indications for and methods of treatment.

Committee from the preclinical and clinical

departments of the Medical and Graduate Schools.

Diagnostic Radiology

Date to be announced (probably in June, 1938)

The technic and indications for the use of radiological methods in the diagnosis of disease.

LEO G. RIGLER, Professor and Head of the Department of Radiology, Medical School, and Associates.

Clinical Pathology

Date to be selected (at the convenience of the group)

A survey of the various fields of laboratory practice for clinical pathologists and others, in the technic and clinical interpretation of tests.

Committee from the Medical and Graduate Schools.

Proctology

Tentative

The diagnosis and treatment of disorders of the anorectal region.

WALTER A. FANSLER, Clinical Associate Professor of Surgery, Medical School, and Associates.

Other Seminars

Requests have been received for the formation of groups in addition to the seminars described above. To date, the number in each instance is not sufficiently great to form a class. If you are interested in any of the following subjects, will you please communicate with the director at your earliest convenience? Allergy, anesthesia, arthritis, deficiency diseases, degenerative diseases, diabetes, electrocardiography, gynecology, medical disorders of the kidney, liver and gallbladder, neurology, neurology and psychiatry, obstetrics, obstetrics and gynecology, orthopedics, pediatrics, physiotherapy, psychiatry, public health, refraction, surgical anatomy, minor surgery, surgical pathology, surgical technic, injection treatment of surgical diseases, and urology.

Information

Address all correspondence to the Director of the Center for Continuation Study, University of Minnesota, Minneapolis, or Dr. William A. O'Brien, Medical Representative, at the same address.

OF GENERAL INTEREST

Dr. Carl G. Morlock, of Rochester, was recently married to Miss Katherine Mercer, also of Rochester.

* * *

Dr. W. Fetterly, of Minneapolis, has become associated with the Malmstrom-Sarff Clinic at Virginia.

* * *

Dr. E. H. Hansen, formerly of Minneapolis, has opened offices in Anoka, for the practice of medicine.

* * *

Dr. T. E. Broadie, superintendent of the Ancker Hospital, Saint Paul, was married September 7, 1937, to Miss Marjorie Allen of Attica, Indiana.

* * *

Dr. R. K. Proeschel, who was formerly associated with Dr. Sherwood of Kimball, has located in Willmar for the practice of medicine.

* * *

Dr. Kenneth Stein, of Lakeville, was married on August 24, to Miss Phyllis Boudin, of Lead, South Dakota.

* * *

Dr. A. F. Branton, of Willmar, was accepted as a member of the American College of Hospital Administrators, at the recent meeting of the American Hospital Association held in Atlantic City.

* * *

Dr. Hubert Lee, formerly of Northfield, has become associated with Dr. Nesmith Nelson of Brainerd, specializing in the treatment of eye, ear, nose and throat ailments.

* * *

Dr. E. H. Frost was chosen chief of staff of the Rice Memorial Hospital at Willmar, at a recent meeting. Dr. R. E. Anderson was selected as secretary of the association organized.

* * *

Dr. and Mrs. Roy F. Raiter, Cloquet, sailed on the steamer Aquitania on August 18 for Europe, where Dr. Raiter will spend two months attending various surgical clinics.

* * *

Dr. Arthur Neumaier of Durham, North Carolina, has joined the staff of the Raiter Hospital at Cloquet. Dr. Neumaier is a graduate of Duke University at Durham, North Carolina.

* * *

Dr. Peter Ward, superintendent of Miller Hospital, Saint Paul, was elected to the board of directors of the American Hospital Association, at the annual convention held recently at Atlantic City. He was chosen for a three-year term on the board.

* * *

Dr. Cecil A. Wilmot has become associated with his brother, Dr. H. E. Wilmot, of Litchfield, in the prac-

tice of medicine. During the past year and a half he has been located at Grand Rapids, where he was associated with Dr. McLeod.

* * *

Dr. Charles Sheppard, of Saint Paul, has become associated in the practice of medicine with his father and uncle, Dr. P. E. Sheppard and Dr. Fred Sheppard of Hutchinson. Dr. Sheppard has recently completed his internship at Miller Hospital, Saint Paul.

* * *

Dr. A. E. Olson, of Duluth, has been appointed co-chairman of the committee on highway first aid service of the Duluth chapter of the American Red Cross, to direct the organization and maintenance of emergency highway first aid depots.

* * *

Dr. R. C. Hunt, of Fairmont, is contemplating the erection of a new hospital. Offices and consultation rooms will be located on the ground floor, and the second floor will be arranged to accommodate fifteen or more beds.

* * *

Dr. Myron O. Henry, of Minneapolis, was the guest speaker at the British Columbia Medical Association meeting held in Vancouver on September 13, 14 and 15. Dr. Henry presented papers on "Surgical Treatment of Fractures of the Hip" and "Spinal Fusion: Chip Graft Method."

* * *

Dr. Olaf Heiberg, resident physician at Minneapolis General Hospital, was married on September 4 to Miss Lois Shaffer, surgical superintendent at Minneapolis General Hospital. The wedding took place in Saint Cloud at the home of the bride's sister, Mrs. E. D. Surface.

* * *

Dr. J. E. Frank, of Springfield, has sold his practice to Dr. E. L. Penk of Stewart, Minnesota. Dr. Frank will open an office at Marshall. Dr. Penk is a graduate of the University of Minnesota medical school and practiced at New England, North Dakota, before coming to Springfield.

* * *

Dr. Milton C. Rosenkrans has located at Wahpeton and has taken over the practice of the late Dr. Benjamin Thane. Dr. Rosenkrans was formerly located at Neillsville, Wisconsin. His wife, Sarah D. Rosenkrans, M.D., will remain in Neillsville temporarily to take care of the practice there.

* * *

Dr. W. W. Yaeger, of Ivanhoe, has taken over the practice of Dr. L. J. Happe, at Marshall. Dr. Yaeger is a graduate of the University of Minnesota medical school, and practiced surgery in South Dakota for two years. He has practised at Ivanhoe for the past nine years.

Dr. M. M. Loucks has become associated with Dr. A. G. Chadbourn of Heron Lake. He was formerly at the station hospital at Fort Cook, Nebraska. Dr. Loucks is a graduate of the University of Minnesota medical school and was a member of the faculty for six years. He was in charge of the x-ray and laboratory departments at the army hospital at Fort Cook.

* * *

Physicians of twenty-four states and of the Philippine Islands are receiving reprints of "The Doctor and Tuberculosis of the Future," the third annual Dr. John W. Bell Tuberculosis Lecture before the Hennepin County Medical Society delivered last December by Dr. H. E. Kleinschmidt, Medical Director of the National Tuberculosis Association.

Reprints of the published lecture, as it appeared in MINNESOTA MEDICINE, have been purchased by tuberculosis associations for distribution to physicians in Colorado, Georgia, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Jersey, North Carolina, Oregon, Pennsylvania, Texas, Utah, Vermont, Washington, Brooklyn, New York city, Chicago and Hawaii and Kauai, in the Philippine Islands.

It is a matter of gratification to the Hennepin County Medical Society that this lecture, locally sponsored, is receiving such widespread attention. The Lecture-ship was established in the Society three years ago by the Hennepin County Tuberculosis Association, which has not yet announced the name of an outstanding leader in the field of tuberculosis who will deliver the lecture during the current year.

* * *

Dr. Walter J. Marcle, of Minneapolis, for the past 30 years active in tuberculosis prevention work, was the guest of honor at a dinner September 28, given by fellow workers and friends on the occasion of his resignation as chief of the Tuberculosis Service of the United States Veterans' Hospital. Dr. Marcle was medical director of the first state sanatorium for the treatment of tuberculosis in the United States at Rutland, Vermont. He was one of the founders of the National Tuberculosis Association in 1904. In 1907, he returned to his native state to act as medical director of the Minnesota State Sanatorium at Walker.

During the World War, he was a member of the Rockefeller Tuberculosis Commission and he also served as Chief Physician to the American Red Cross, in Switzerland. Dr. Marcle is a past president of the Minnesota Public Health Association, the Mississippi Valley Conference, and of the Hennepin County Tuberculosis Association. He will give his full time to his private practice.

Causalin (Causyth) Not Acceptable for N.N.R.

The Council on Pharmacy and Chemistry reports that "Causalin" is another name for Causyth, which was exploited several years ago in Austria as a treatment for arthritis. A number of recent inquiries from American physicians about Causalin prompted a review of the present claims for the product. The status of Causalin is about the same as that of Causyth reported in *The Journal A. M. A.*, March 1, 1930. At that time a referee, who reviewed most of the reports on Causyth in German medical literature, held the evidence unsatisfactory and uncritical and the product therapeutically worthless and ineffective, except for possible shock effects which might be dangerous. Today the product is being exploited as Causalin in this country by the Amfre Drug Co., Inc., 31 East Twenty-Seventh Street, New York City. Presumably the product is manufactured abroad and distributed by this agency in this country. Clearly, there is nothing original about the product, consisting as it does of the well known official drug aminopyrine (U.S.P.) and the active chemical group hydroxyquinoline or chiniofon (U.S.P.) which is an amebicide and a mild wound antiseptic. Quinoline is also an important chemical group in quinine (U.S.P.) and cinchophen (N.F.). Accordingly, such statements as the following in the advertising literature appear misleading: "Causalin (aminodimethyl-pyrazolon - quinoline - sulphate) contains no cinchophen and no cinchophen derivatives." The claims for Causalin (Causyth) are exaggerated, misleading and unwarranted, and the product has no place in the therapeutic armamentarium of responsible, qualified physicians. The exploiters of the product are to be censured for omissions of warning concerning its dangerous toxic potentialities, for obscuring the essential composition of the product by using an unnecessarily long and unfamiliar chemical name for the well known drug aminopyrine, and for using the non-informative name Causalin. There is no good reason to believe that the claimed composition of Causalin entitles it to be considered a chemical compound as indicated in the advertising; apparently it is a mixture, without originality or rationality. Causalin is to be condemned as an unsafe and dangerous product, the exploitation of which is against the interest of the public and the medical profession. The Council declared Causalin (Causyth) not acceptable for N.N.R. for the reasons given in the foregoing report. (J. A. M. A., August 14, 1937, p. 506.)

Dosage of Preparations Containing Vitamins A and D

The Council on Pharmacy and Chemistry held that the recommended dosages for capsule and tablet preparations of vitamins A and/or D should not be less than the minimum dosage for infants and adults equivalent to two teaspoonfuls of cod liver oil—U.S.P. (minimum strength). The Council voted the requirement (1) that the dosages of accepted preparations of vitamins A and/or D provide at least the equivalent in these vitamins of two teaspoonfuls of cod liver oil but not more than 10,000 units of vitamin A and 1,000 units of vitamin D, and (2) that dosage statements on labels and in advertising should be accompanied by the phrase "or as prescribed by your physician." (J. A. M. A., August 14, 1937, p. 507.)

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR OCTOBER

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 9:45 o'clock every Saturday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month will be as follows:

October 2—Heart Disease.

October 9—Hand Infections.

October 16—Dietary Dangers.

October 23—Hemorrhage.

October 30—Dental Health Education.

MAYO FOUNDATION LECTURES

A special program of lectures and demonstrations in surgery and medicine will be held under the direction of The Mayo Foundation from November 8 to 12, inclusive. Mornings will be devoted to surgical and medical clinics. In the afternoons and evenings, in addition to a clinico-pathologic conference, symposiums will be conducted on gastro-enterology, sulfanilimide therapy, hematology, neurology, allergy, diseases of the chest and cardio-vascular diseases. Visiting physicians are invited to attend.

MINNESOTA STATE ASSOCIATION MEETING

The 85th Annual Meeting of the Minnesota State Medical Association will be held June 29 and 30 and July 1, 1938, at the Hotel Duluth in Duluth.

Dr. J. M. Hayes, president-elect of the Association, is general chairman of the committee in charge of program arrangements. The surgical section of the committee includes Dr. Stanley Maxeiner, Minneapolis, chairman, Dr. V. S. Counseller, Rochester, secretary, and Dr. Roscoe Hunt, Fairmont. Dr. P. G. Boman, Duluth, is chairman of the medical section; Dr. D. B. Souster, Saint Paul, secretary, and Dr. J. N. Libert, St. Cloud. Dr. R. J. Moe, Duluth, is general chairman of local arrangements. Dr. W. A. O'Brien is chairman of the section on specialties.

All members who wish to present papers or exhibits at the meeting are urged by the committee to send their requests promptly to state headquarters.

EAST CENTRAL MINNESOTA MEDICAL SOCIETY

The East Central Minnesota Medical Society met at Braham, Minnesota, on September 22, 1937. Dr. Elton Clothier of Elk River was elected to membership in the society. Dinner was served and in the evening a scientific program was presented by guest speakers.

Dr. T. A. Peppard of Minneapolis spoke on the "Use of Digitalis and Quinidine in Heart Diseases" and Dr. Otto Yoerg, also of Minneapolis, gave an address on "Improved Treatment of Fractures of Os Calcis." Both addresses were supplemented by moving picture and slides.

WABASHA COUNTY MEDICAL SOCIETY

The sixty-ninth annual meeting of the Wabasha County Medical Society will be held at Kellogg, Minnesota, on Thursday, October 7, in the parlors of the Methodist Episcopal Church. The business session will be held at 4 P. M., and the scientific session at 7:30 P. M. The following program has been arranged:

"Review of the Methods of the Induction of Fever for Therapeutic Purposes"—Dr. B. A. FLESCHÉ, Lake City.

"The Use of Sulfanilamide"—Dr. E. G. BANNICK, Mayo Clinic, Rochester.

"Tuberculosis in Southeastern Minnesota"—Dr. R. H. FROST, Wabasha.

"Obstetric Problems; Anesthesia and Analgesia in the Home"—Dr. G. E. HUDSON, Minneapolis.

"The Medical Treatment of Diseases of the Gall Bladder"—Dr. J. F. WEIR, Mayo Clinic, Rochester.

Dr. B. A. Flesché of Lake City is president of the Society, Dr. J. S. Collins of Wabasha is vice president, and Dr. W. F. Wilson of Lake City is secretary.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The seventeenth annual meeting of the Northern Minnesota Medical Association was held at Virginia, Minnesota, August 27 and 28. The following officers were elected for the coming year:

President.....Dr. J. F. Norman, Crookston
Vice President.....Dr. O. W. Parker, Ely
Secretary-Treasurer.....Dr. Clarence Jacobson, Chisholm

Crookston was named next year's meeting place of the Association.

Dr. Frank Hirschboeck, of Duluth, served as toastmaster at the banquet Friday evening. Professor J. A. Merrill, president emeritus of the Superior State Teachers College, was the guest speaker. His subject was "The Wonderland of Lake Superior." He described the land in Northern Minnesota and upper Wisconsin and Michigan as the "eighth wonder of the world," stating that this area is the oldest place, from a geological standpoint, in America, if not in the world. He explained that a motorist in this territory could in twenty-four hours witness earth formations which took nature two billion years to build. Among the wonders named were Jasper Peak north of Ely, the iron mines, the volcanic ridge north and south of

Lake Superior, the copper mines of Michigan, and Lake Itasca, source of the Mississippi.

Dr. Leland of the American Medical Association staff gave an address on the "Business Side of Medicine." Dr. A. W. Adson, president of the Minnesota State Medical Association, in his address asked the doctors to offer encouragement to the young men in the profession and to give them a place in the work.

In his annual address, Dr. O. O. Larsen appealed to the physicians to increase their participation in the national crusade to eliminate venereal disease.

The Side Actions of Barbitals

Barbituric acid and the various compounds derived from it by alteration of the molecule are now widely used. Extensive employment by qualified practitioners and also by the public has grown to proportions that indicate lack of knowledge of the side actions of these drugs. Even more blameworthy is the practice of introducing new and more potent barbitals without reliable investigation of their pharmacologic actions. Hanzlik indicates three experiments which illustrate depression and paralysis of peripheral neuromuscular elements in the autonomic system caused by amytal, one of the highly active barbitals, which has been promoted for intravenous analgesia or anesthesia. The chain of evidence on the side actions of the arbitals justifies the conclusion that ganglionic paralysis or synaptic block in the cardiac vagi may follow the intravenous or intraperitoneal administration of amytal, an action paralleled commonly by such poisons as nicotine and lobeline and sometimes by choline. On the other hand the ganglionic paralysis, together with the central depression of barbitol, would make an effective combination for controlling asthmatic attacks of reflex origin, a point that is worthy of further investigation and that again illustrates the value of detailed pharmacologic consideration. All in all, these side actions emphasize that all the barbitals cause widespread depression or paralysis of living tissues in varying degrees and that there is no such thing as a non-toxic sedative or anesthetic that may be used with impunity. Some of the side actions might easily obscure or confuse a diagnosis and affect a patient's recovery from a disease in which the barbitol was exhibited merely as a symptomatic or palliative measure. The general condition of the patient should always be kept in mind when barbitals are administered. A number of state legislatures have passed or are in the process of passing measures limiting the sale of barbitals to prescriptions signed by physicians, dentists or veterinarians. Even better than legislation in this respect is an education of barbitol users to the attending dangers of these compounds. Like most drugs, they are two-edged swords, useful in the hands of those competent to administer them, dangerous in the hands of the incompetent. Additional special knowledge, bearing particularly on the pharmacologic characteristics of various hypnotics and on the clinical evaluation of the patient, is essential (J. A. M. A., August 14, 1937, p. 508.)

WOMAN'S AUXILIARY

MRS. J. F. NORMAN, Crookston, *President*

MRS. A. A. PASSER, Olivia, *Editor*

The Woman's Auxiliary mourns the death of Mrs. Stephen Baxter—who died unexpectedly, July 29, while on a visit at the home of her son-in-law and daughter, Captain and Mrs. Benjamin Eaton Thurston (Betty Gay Baxter), at West Point. Deepest sympathy is extended to her husband, Dr. Stephen H. Baxter, and the other surviving relatives.

Mrs. Baxter was president of the Woman's Auxiliary of the Hennepin County Medical Association at the time of her death and for many years had taken an active part in numerous other organizations.

Laura Robb Baxter possessed many admirable attributes and was beloved generally. She leaves a host of friends who mourn deeply her untimely death.

Board Meeting

The fall meeting of the Executive Board was held at the Town and Country club, Saint Paul, Tuesday, October 5, at 10 A. M.

Mrs. J. F. Norman, Crookston, state president, presided at the meeting, and various matters of importance were discussed. Reports of chairmen and county presidents were read. Following the luncheon the board members were taken to the Coach adjoining the Medical Association offices at 11 West Summit Avenue, where short addresses were given by Dr. James Hayes, Minneapolis, Doctor L. R. Critchfield and Dr. Robert Burns of Saint Paul.

PRESIDENT'S ADDRESS*

MRS. J. F. NORMAN, *Crookston, Minnesota*

Madame Chairman, Mrs. Blake, Members of the Auxiliary and Guests:

Our State Auxiliary was organized in October, 1922. We are therefore entering upon our sixteenth year as a state organization.

If we may compare the life of an organization to that of individuals, the thought occurs that at no past or future time in their lives do hope, and the will to achieve, run quite so high as during that sixteenth year. The age accepts no discouragement, admits no defeat, but looks ahead with confidence and a determination to win over any obstacle which life may present.

But hand in hand with high courage at this time in the life of individuals, we occasionally discover an intolerance of things as they are, and an impatience to bring about a new order in the least possible time, together with the feeling that everything which the past has to offer has already been learned.

*Presented before the Woman's Auxiliary of the Minnesota State Medical Association at the annual meeting, Saint Paul, Minnesota, May 4, 1937.

As an organization, then, let us hold fast to the virtues and avoid the pitfalls which accompany the age we are entering. Let us, individually and collectively, realize and appreciate the work which has been accomplished by our splendid leaders, state and national, during these past years, and remind ourselves that we owe a debt of gratitude to all those who have given unreservedly of their talents and their time to build this organization which we now enjoy.

As members of the Auxiliary it is well to remember the confidence reposed in us by the leaders of the State Medical Association, our parent organization—those leaders who have told us that the most potent forces in overcoming unethical efforts to treat the sick, must, and will be, the State and County Auxiliaries.

How, then, can we qualify for this work and make ourselves deserving of this confidence? By becoming well-informed members of our local Auxiliary. Not by feeling that it is only the officers in each group who must know what is happening in the world of medical economics and the problems confronting organized medicine, but by accepting the responsibility for ourselves, individually, as members of the group.

Becoming informed is a continuous process. It means reading the Organization Section of the *Journal of the American Medical Association*, which includes news of the Woman's Auxiliary; reading the Medical Economics section and State Auxiliary news in *MINNESOTA MEDICINE*; reading *Everybody's Health and Hygiene*; giving attention to the radio broadcasts on health and knowing what legislation the Medical Association sponsors; and it means subscribing to and becoming familiar with the material given in the News Letter which is sent out by the National Auxiliary. The News Letter has become a vital force in the life of the Auxiliary, and is an interesting medium of information.

Does such a program sound formidable? Not necessarily, because it all takes less time than the list indicates; and, after her home, what should interest the doctor's wife to a greater extent than the welfare of the profession which her husband serves? Through information thus acquired she becomes a participant in public relations, as a member of other organized groups. Through her tactful direction, these groups are brought to the medical profession for speakers and for authentic material on everything pertaining to health.

But frequently in the minds of Auxiliary members there is the thought that any effort they make in the service of their Auxiliary will be misconstrued by the public, and they will be accused of attempting to further the personal interests of their husbands. If it can be kept in mind that all auxiliaries are organized to serve the interests of organized medicine as a whole, especially for the purpose of promoting good fellowship within the profession and assisting in the work of health education, the public will be quick to

understand that members of the auxiliary are not using the organization to promote the interests of the individual doctor, but are merely assisting organized medicine in its self appointed task of guarding the health of each community.

In the beginning, the Auxiliary existed almost entirely for the purpose of handling the social side of conventions, which in itself requires capable organization and management. But, since women are constituted as they are, with a feeling that no organization has the right to exist merely for the pleasure of its members, the various County and State Auxiliaries soon turned their attention to work which seemed to be waiting, and could be best accomplished by women who have the privilege of expert guidance from the medical profession. The results are apparent in the splendid reports heard at the annual meeting today.

You have noted that foremost in the minds of Auxiliary members are matters pertaining to the health and welfare of individuals and communities, and health education in various forms receives the greatest share of attention. This is as it should be, for one of the objectives of the Auxiliary is to pass on to the public the point of view of the medical profession, and keep health leadership where it belongs, with the profession.

Many communities are carrying on this work through public health agencies, and these agencies welcome the assistance and coöperation of the doctor's wife. In aiding them she is promoting the interests of the profession, to the end that organized medicine and not organized lay opinion, interprets the medical arts to the public.

We hear it stated that health education has received so much attention that it is already well in hand and will go forward successfully with or without our assistance. Fortunately, this is true, but it is work which has no ending as long as the human race endures. While young people and old continue to suffer from tuberculosis, while life is cut short by cancer, while small-pox and diphtheria still take their toll, and while the rickets of childhood and anemia and malnutrition in young women continue to be serious factors in the maternal death rate, there is work enough in health education to engage the attention of all of us.

During the coming year, it will be my earnest desire to be of service to each Auxiliary, and with the friendly spirit and loyalty to the State Organization which exists within each group, we shall hope to experience continued growth and progress during this sixteenth year of our existence.

If the (966) women of the Minnesota Medical Auxiliary will give their informed and intelligent consideration to the special problems which are the concern of the medical profession at the present time, they can be a powerful, unobtrusive force in the final solving of those problems.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

SYPHILIS, THE NEXT GREAT PLAGUE TO GO. Morris Fishbein, M.D., editor of *Journal of the American Medical Association* and *Hygeia*. 70 pages. Illus. Price, \$1.00, cloth. Philadelphia: David McKay Co., 1937.

PSYCHIATRIC NURSING. William S. Sadler, M.D. Chief Psychiatrist and Director Chicago Institute of Research and Diagnosis; Consulting Psychiatrist to Columbus Hospital. In collaboration with Lena K. Sadler, M.D., and Anna B. Kellogg, R.N. 433 pages. Price, \$2.75, cloth. St. Louis: C. V. Mosby Co., 1937.

THE TRAFFIC IN HEALTH. Charles Solomon, Assistant Clinical Professor of Medicine, Long Island College of Medicine; Lecturer in Materia Medica, Training School for Nurses, Jewish Hospital of Brooklyn. 393 pages. Price, \$2.75, cloth. New York: Navarre Publishing Co., 1937.

EMOTIONAL ADJUSTMENT IN MARRIAGE. Le Mon Clark, M.S., M.D., Assistant in Obstetrics and Gynecology, University of Illinois College of Medicine, 261 pages. Price, cloth, \$3.00. St. Louis: C. V. Mosby Co., 1937.

YOUR DIET AND YOUR HEALTH. Morris Fishbein, M.D. Editor of the *Journal of the American Medical Association*; *Hygeia*, the Health Magazine. 298 pages. Price, cloth, \$2.50. New York: Whittlesey House, McGraw-Hill Book Co., 1937.

SYNOPSIS OF GYNECOLOGY, based on the textbook *Desires of Women*. By H. S. Crossen and R. J. Crossen. 2nd Edition, 247 pp. Price \$3.00. St. Louis: The C. V. Mosby Company, 1937.

This synopsis well covers the field for which it is intended, i.e., for those who need to know this subject only in a general way. It is concise, covers practically all points necessary in the general course, and does not overload the student with too detailed descriptions of pathologic conditions. The figures illustrate the text in a satisfactory manner. It is a valuable contribution to textbooks on the subject.

H. M. WYNNE, M.D.

PHYSICAL DIAGNOSIS. Don C. Sutton, M.S., M.D., Associate Professor of Medicine, Northwestern University School of Medicine. 495 pages. Illus. Price, \$5.00. St. Louis: C. V. Mosby Co., 1937.

Physical Diagnosis by Sutton is a well-organized work covering all the phases of physical diagnosis, in a concise and very readable style. The book should be especially valuable to the medical student. The emphasis placed on the use of the senses in diagnosis is timely, for clinical observation in the care of the patient is still important, laboratory data subordinate.

An Historical Introduction by Irving S. Cutter is a most valuable addition. The volume closes with an excellent, comprehensive index.

It seems unfortunate that such a generally excellent volume should be handicapped by the use of a glossy, glaring paper which makes reading difficult, especially under artificial light.

H. O.

SYNOPSIS OF DIGESTIVE DISEASES. By John L. Kantor, Ph.D., M.D., Associate in Medicine, Columbia University. 300 pages. Illus. Price \$3.50. St. Louis: C. V. Mosby Co., 1937.

This little book is what it purports to be, a synopsis. The author, who is known to us as the author of "The Treatment of Common Disorders of Digestion," published in 1924, succeeds in condensing a great deal of material into small space. For the most part the essential facts concerning the digestive diseases are well and accurately stated and, while it would be too much to ask to get any two men to agree entirely upon certain details, there is very little to call forth any adverse criticism. The author has had adequate experience to qualify him as a gastro-enterologist, he being an associate in medicine at Columbia University and gastro-enterologist at the Montefiore Hospital. The book is illustrated and is a very satisfactory synopsis.

T. A. PEPPARD, M.D.

ANNUAL REPRINTS OF THE REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY of the American Medical Association for 1936, with the Comments That Have Appeared in the Journal. Cloth. Price, \$1. Pp. 104. Chicago: American Medical Association, 1937.

This book is essentially a record of the negative actions of that distinguished body, the Council on Pharmacy and Chemistry of the American Medical Association; that is, it sets forth the findings concerning medicinal preparations which the Council has voted to be unacceptable for recognition and use by the medical profession. Many of the reports record outright rejection or the rescinding of previous acceptances; others report in a preliminary way on products which appear to have promise but are not yet sufficiently tested or controlled to be ready for general use by the profession.

Among the reports on out-and-out unacceptable products are Amend's Solution and the "Igol" products, iodine preparations marketed under misleading or unacceptable claims, the latter under an uninformative proprietary name; Androstine-Ciba, claimed to be a testicular extract and found to be an irrational combination of inactive preparations, marketed with unwarranted and misleading claims; Gadoment, a preparation of cod liver oil in a wax base with zinc oxide benzoin and phenol, proposed for use in the treatment of burns, cuts and minor skin irritations, found unacceptable as being an unoriginal product of insufficiently declared

BOOK REVIEWS

composition marketed under a coined proprietary name with unwarranted therapeutic claims, and indirectly advertised to the public; the "Carasyl" preparations, which are essentially mixtures of psyllium flour, karama gum and fig flour, marketed with unsubstantiated therapeutic claims under a proprietary name.

In 1934 the Council sponsored an exhaustive report on bacteriophage therapy which pointed out that in view of the present status of knowledge, no such preparations could be accepted for New and Non-official Remedies. In this volume of the collected Council reports, the Council declares the "Phagoid" preparations, a line of bacteriophage products, definitely unacceptable because they are offered to the medical profession with unscientific, unwarranted claims, thus encouraging physicians to use in a routine way medicaments, the therapeutic value of which had not been established, and because the preparations conflicted in other ways with the rules of the Council.

This volume includes a preliminary report on Trichophyton and Oidiomycin-trichophyton preparations marketed by Lederle Laboratories, Inc. This report is a sequel to the preliminary report on Trichophyton Extract issued in 1932, which postponed consideration to await development of further clinical evidence on Trichophyton therapy. Also included in this volume is a report on the unacceptability of two trichophyton preparations, Dermatormycol and Dermotricofitin, distributed in this country by Ernst Bischoff Co., Inc., under the stated proprietary names without sufficiently declared composition and with unwarranted therapeutic claims.

Other preliminary reports are Refined and Concentrated Antipneumococcic Serum Type VII-Lederle, Present Status of Tetrachlorethylene (since accepted for N.N.R.), Smallpox Vaccine (from Chick Chorio-Allantoic Membrane)-Lilly, and Use of Trichloroethylene for General Anesthesia.

CLASSIFIED ADVERTISING

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To share with one other physician the space, equipment and technical service of his present completely furnished and equipped office in the Lowry Medical Arts Building, St. Paul.

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FOR FURTHER INFORMATION ADDRESS

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THE USE OF SULFANILAMIDE AND PRONTOSIL SOLUTION*

ALEX E. BROWN, M.D., EDWIN G. BANNICK, M.D. and HAROLD C. HABEIN, M.D.

Rochester, Minnesota

ANY new chemotherapeutic preparation must necessarily be heralded by a certain skepticism, for time has proved a most valuable agent or tempering of undue enthusiasm. Nevertheless, the reports which have been rapidly accumulating from clinical and experimental observations on the use of para-aminobenzenesulfonamide and associated compounds are such as to merit careful consideration.

Azo dye substances containing a sulfamido group have been known for some years to possess qualities deterrent to streptococcal infections in mice. As early as 1908 such a compound was made as sulfaminoazobenzol, but this lacked solubility and was unsuited for clinical application. Further studies on these compounds led to the demonstration by Domagk in 1935 that one of them known as "prontosil," the hydrochloride of 4-sulfamido-2, 4 diaminoazobenzol, possessed chemotherapeutic activity for hemolytic streptococcal infections in animals and possessed slight solubility. Further study then led to the discovery of prontosil solution. This is a 2.5 per cent watery solution of disodium 4-sulfamido-phenyl-2 azo-7-acetyl-amino-1-hydroxy-naphthalene 3, 6 disulphonate. The former preparation, prontosil, is not obtainable in the United States.

Prontosil solution is formed from a reddish crystalline material and is soluble to about 4 per cent in water. Reducing agents, such as cysteine hydrochloride, have been shown to reduce this compound to para-aminobenzene sulfonamide, also known as "prontylin" or "sulfanamide" and now known officially as "sulfanilamide." Sulfanilamide is a white crystalline material with a melting point of 165° C.; it is soluble at room

temperatures to about 0.8 per cent in water. Trefoel, Nitti and Bovet first reported that prontosil was changed in the body in the presence of streptococcal infection to para-amino-benzenesulfonamide, and Long and Bliss¹⁴ have shown that hemolytic streptococci have the power of similarly reducing prontosil in vitro. It has thus been suggested that possibly prontosil and prontosil solution owe their therapeutic activity in man in the presence of streptococcal infection to such a reduction to sulfanilamide. Long and Bliss have stated, however, that such a theory is open to question because unknown chemical reactions may occur in the body.

The report in June, 1936, of the work of Colebrook and Kenny in the treatment of puerperal sepsis in human subjects and of experimental infections in mice with prontosil solution furnished a real stimulus to extension of clinical and experimental studies in this field. Since then, further reports, principally by Long and Bliss^{12,13,14} in this country, and by others, have added to present knowledge of the subject. Experiments by Colebrook and Kenny and others⁴ would indicate that sulfanilamide exerts a definite bactericidal and bacteriostatic effect on streptococci in vitro. Long and Bliss,¹⁴ while able to confirm this bacteriostatic effect, felt that the bactericidal effect in vitro was somewhat questionable and stated that the mechanism which obtains in man is still obscure, although they were of the opinion that sulfanilamide exerts its action on the streptococci rather than on the leukocytes.

Studies by various observers indicate that, in man, sulfanilamide is practically entirely excreted in the urine in a free state and in a conjugated form as para-acetylaminobenzenesulfon-

*From the Division of Medicine, The Mayo Clinic, Rochester, Minnesota. Read before the meeting of the Southern Minnesota Medical Association, Winona, Minnesota, August 11, 1937.

amide. Marshall, Emerson, and Cutting have shown that the rate of absorption of sulfanilamide varies somewhat in individuals, but that, in general, on divided daily doses two or three days are required to establish equilibrium between the amount ingested and the amount excreted, a similar time interval then being necessary to free the body of the substance. They have also demonstrated that nearly complete absorption takes place from the gastro-intestinal tract in about four hours, and that the substance then passes readily from the blood and is widely distributed through the tissues. Subcutaneous injection of sulfanilamide does not lead to a higher concentration in the blood than oral administration. Studies also indicate that, following the oral administration of sulfanilamide, concentrations occur in the spinal fluid, pleural and peritoneal effusions and in the prostatic secretion which are but slightly lower than those in the blood.

From the clinical standpoint, the most valuable effect of sulfanilamide at present seems to have been obtained in the treatment of infections due to hemolytic streptococci, gonococci, meningococci and those organisms commonly found in infections of the urinary tract. Experience may prove that pneumococcal infections, particularly those due to Type III pneumococci, will also offer a satisfactory field. Scattered reports suggest that sulfanilamide may be of value in the treatment of staphylococcal infections, and recently Bohlman has reported apparently beneficial results in three cases of gas-bacillus infection, although he admitted that the results may have been due in part to checking symbiotic growth with the streptococcus. Clinical observation would lead one to feel that, with the use of sulfanilamide, a chemotherapeutic effect is exerted on the organism which has a tendency to limit pre-existing infection to tissues already involved and in septicemia to free the blood stream of circulating organisms.

According to Long,¹⁴ the most effective chemotherapy in the hemolytic streptococcal group of organisms is produced in groups A and B (Lancefield), the results for groups D and G being questionable. Colebrook and Kenny were able to show in their original work a reduction in mortality from 22 to 8 per cent in a series of patients with puerperal sepsis. Long and Bliss,¹² in their original article, reported similar favor-

able results for a series of patients with scattered types of hemolytic streptococcal infections. Equally optimistic reports have issued from other observers.

In the treatment of gonococcal infections by sulfanilamide, the results of Dees and Colston have been corroborated by studies at The Mayo Clinic. Up to the present time approximately 90 per cent of male patients and about 80 per cent of female patients with gonorrhea who have been adequately treated with sulfanilamide have been cured. In a few instances recurrences have been noted, but these have usually responded promptly to further sulfanilamide therapy.

In urinary tract infections, the studies of Helmholtz and Osterberg and of Cook and Buchtel at the clinic would indicate that sulfanilamide produces a urine strongly bactericidal for the organisms usually present in such infections with the exception of *Streptococcus faecalis*. Possibly the ease with which high urinary concentrations of the drug are obtained on comparatively moderate doses is a factor in the satisfactory results which have been obtained. As a rule, concentrations in the urine of 60 to 125 mg. per 100 c.c. for free, and 50 to 100 mg. per 100 c.c. for conjugated, sulfanilamide are obtained on doses of 45 to 60 grains (3 to 4 gm.) daily. Helmholtz and Osterberg have shown that these concentrations are definitely bactericidal in urinary infections. In the early work which was done, Helmholtz and Osterberg felt that the conjugated form of sulfanilamide was more bactericidal in urine, but more recent studies would indicate that the free form seems equally bactericidal. They have shown, for example, that in urinary infections, an alkaline urine seems to enhance the bactericidal values of both forms and that it is desirable to obtain a urinary pH of 7 and preferably 7.5. Buchtel and Cook also found the drug to be effective clinically in both acid and alkaline urines. Sulfanilamide, therefore, has a distinct advantage over mandelic acid in the treatment of infections of the urinary tract because the effectiveness of the latter is dependent upon acidification of the urine, and this is often difficult and sometimes impossible to secure. Buchtel and Cook were also of the opinion that sulfanilamide is a more potent urinary antiseptic than mandelic acid, although it by no means supplants the latter. The fact that sulfanilamide is effective in the treatment of urinary infections due to urea-splitting

organisms such as *Proteus vulgaris* is also gratifying, because such infections have heretofore been very resistant to treatment. They have, in addition, called attention to the striking benefits obtained in the treatment of prostatitis by the use of this drug.

Favorable reports on the use of sulfanilamide in the treatment of pneumococcal infections have also appeared in the literature. Cooper, Gross, and Mellon have reported good results in Type II pneumococcal infections produced subcutaneously in mice and intrabronchially in rats.⁹ Förlein also has shown that Type III pneumococci were susceptible to the drug and Rosenthal¹⁰ in addition that Types I and II pneumococci were susceptible. From the clinical side, Weinberg and his associates have reported recovery of about 75 per cent of their patients with Type III pneumococcal pneumonia when such patients were treated with sulfanilamide.

In meningococcal infections, Proom, and Buttle and his coworkers, working independently, have shown that sulfanilamide exerts a protective influence in mice. Clinically this finding has been confirmed by the excellent results of Weinberg and Schwentker, who also worked independently.

Use of sulfanilamide at the clinic has in general been limited to those conditions falling in the realm of general medicine and to the treatment of those infections occurring as complications in special fields of medicine. In light of present knowledge, we have attempted to limit the use of sulfanilamide to the treatment of those conditions which seem to present clear-cut therapeutic problems. We have tried in each case to ascertain the organism responsible for the infection and, when this has not been possible, we have tried to be guided by the merits of the individual problem. Our largest experience has been in the treatment of the hemolytic streptococcal groups of organisms and the results obtained have been very gratifying.

In non-neisserian pelvic infections, our experience has been to some extent in the treatment of those infections associated with carcinoma of the cervix where radium therapy is desirable, and in these cases we have felt sulfanilamide to be of value. Usually the infection has been rapidly controlled, and we have subsequently been able to employ radium therapy when clinical experience had indicated that it was not feasible be-

cause of the danger of an exacerbation of the infection. In one case, in which there was a previous, known pelvic infection, a similar prophylactic effect occurred; consequently, the use of sulfanilamide may make radium therapy possible in cases in which patients have previously been denied this extremely valuable form of treatment.

In the treatment of severe eye infections due to hemolytic streptococci which in the past have presented a difficult therapeutic problem, experience would indicate sulfanilamide to be of considerable value. Initial infections have shown a satisfactory response and certain postoperative complications have come to a successful termination when experience had indicated the possibility of a less favorable outcome. Likewise in throat infections the course of the disease has been shortened and complications may have been prevented; at least we have seen no serious complications in any such case in which sulfanilamide was used.

In the treatment of severe cellulitis and erysipelas with sulfanilamide, striking results have occurred, although coincidental roentgen and other types of therapy have at times served to prevent an entirely satisfactory therapeutic evaluation. Nevertheless, the unusually rapid recovery in most of these cases permits us to assume that sulfanilamide was a valuable therapeutic aid. To illustrate this point we will cite one of a group of such cases: The patient, a woman thirty-four years of age, was admitted to the clinic with an extensive axillary cellulitis and a large subpectoral cellulitis and abscess. These had followed an infection in her fingers which she had received while caring for a son who had scarlet fever. The primary infection had occurred three weeks previously, and for two weeks before admission she had been having daily chills and fever, her temperature reaching 105° F. She was in an extremely toxic condition on admission although blood cultures showed no growth of organisms. She was immediately given prontosil solution subcutaneously and sulfanilamide orally. In addition to this treatment surgical drainage of the subpectoral abscess was instituted. A culture from the abscess at this time showed an infection with hemolytic streptococci. The patient was also given two transfusions of blood, obtained from her son who had had scarlet fever. Each of the therapeutic procedures mentioned probably con-

tributed considerably to the prompt and striking recovery that took place and it is therefore difficult to know the exact value to be attributed to the prontosil and sulfanilamide. On the other hand, we have seen a good many similar infections in the past and have not seen such patients recover so rapidly nor such wounds heal so promptly. We therefore believe that similar results would not have been obtained if prontosil and sulfanilamide had not been given.

Our experience with the treatment of septicemia due to hemolytic streptococci with sulfanilamide, while limited to a few cases, corroborates the favorable reports of other observers. Two of these cases merit further comment because we do not believe either of the patients would have recovered had not sulfanilamide or prontosil been used:

The first of these patients was a woman, forty-eight years of age, who was admitted to the clinic in a state of severe toxemia resulting from an extensive, bilateral streptococcal pneumonia with a hemolytic streptococcal septicemia. She also had bilateral pleural effusion, cultures of the aspirated fluid showing hemolytic streptococci on both sides. The blood cultures showed several colonies of hemolytic streptococci per cubic centimeter of blood. She had an active fever and, shortly after admission, metastatic abscesses developed in the region of the right ankle, left elbow, and left eye. The patient was in the hospital for eleven days before any treatment with prontosil or sulfanilamide was given. During this period she had been given three blood transfusions of 500 c.c. each and eight injections, of 20 c.c. each, of convalescent scarlet fever serum; in addition, she was in an oxygen tent during the entire period. In spite of this treatment, however, the patient's condition gradually became worse and blood cultures remained positive for hemolytic streptococci. At this point treatment with prontosil and sulfanilamide was begun and she soon began to improve. The blood culture on the fourth day after this treatment was started showed no growth. The metastatic abscesses began to clear up and the residual pneumonia and pleural effusions rapidly subsided. The patient was dismissed from the hospital on the thirty-ninth day, having made an apparently complete recovery except for residual trouble in her left eye.

The second patient was a woman, thirty-seven years of age, in whom a severe septicemia de-

veloped while she was receiving treatment for an active infectious arthritis. A blood culture showed 325 colonies of hemolytic streptococci per cubic centimeter, which made the prognosis seem quite hopeless. At this time treatment with prontosil solution intramuscularly, supplemented by sulfanilamide orally, was given. Two days later the blood culture showed only fifteen colonies of hemolytic streptococci per cubic centimeter of blood, and shortly after this the blood culture showed no growth of organisms at all. The patient's clinical recovery was slow because of complications, but ultimately she made a complete recovery except for the fact that her arthritis showed no improvement over that noted on admission.

It must be remembered in any clinical evaluation that *Streptococcus hemolyticus*, as Bordet showed years ago, owes its marked power of invasiveness in a large part to its ability to resist phagocytosis, and that certain virulent variants exist which have always been resistant to phagocytosis. It is to be expected that in infections of this nature and those due to certain alpha and gamma streptococci, sulfanilamide may prove of little value, whereas in other types of streptococcal infection it exerts a definite influence.

We have had but little experience with the pneumococcal group of infections. In the case of one patient with a severe pneumococcal (Type II) septicemia secondary to an infected recurrent sarcoma of the antrum, death occurred following local hemorrhage. The blood culture at the onset showed fourteen colonies per cubic centimeter; two days after 80,000 units of specific serum had been given the culture showed 100 colonies per cubic centimeter. Sulfanilamide and prontosil therapy was instituted in the presence of metastatic bilateral eye infections and the blood stream subsequently showed only ten colonies per cubic centimeter, and then, later, none at all. Coincidental clinical improvement was noted at the time of improvement in the blood picture, and although the outcome was unfavorable, we are led to believe that further trial with sulfanilamide is warranted in infections of this type.

We have seen but one case of meningococcal meningitis which was associated with septicemia. This patient had received specific serum and other forms of therapy without improvement and recovered subsequent to the use of sulfanilamide and prontosil.

Our experiences with sulfanilamide in the treatment of gonococcal infections has been limited to females, inasmuch as male patients at the clinic are routinely treated in the Section on Urology. Up to the present time we have had the opportunity of observing the treatment of eight females with gonorrhea. In six of these cases excellent results have been obtained and we have considered the patients as cured, and in two of these six cases results were obtained with relatively small amounts of sulfanilamide. One patient had received repeated intensive treatment with artificial fever and prolonged local treatment without improvement and with persisting positive cultures for *Neisseria gonorrhoeae*. She was then given sulfanilamide and within a few days practically all vaginal discharge ceased and subsequently four smears and chocolate blood agar cultures from the cervix and urethra showed no organisms of gonorrhea. The last culture was taken after a menstrual period.

In contrast to this case, however, was one in which we were unable to produce any appreciable benefit by large and prolonged doses of sulfanilamide with a blood concentration as high as 9.6 mg. per 100 c.c. In the other case in which treatment with sulfanilamide was not successful, it was impossible to obtain persistent negative cultures. Thus far we have been unable to offer any satisfactory explanation for these failures or for the variation in the dosage of the drug necessary to produce cure.

In the treatment of infections of the urinary tract our results have corroborated those of our colleagues in the Section on Urology.

In a brief experience with a miscellaneous group of infections we have found sulfanilamide of no value in cases of infections due to *Streptococcus viridans*, including subacute bacterial endocarditis, and of doubtful value in cases of rheumatic fever and infectious arthritis. Further experience with sulfanilamide in the treatment of the latter types of infections seems advisable. We have also used the drug in one case of acute tularemia, without apparent benefit, and in one case of gas-bacillus infection, with questionable benefit. In the latter case, specific serum was also used and the patient has made a gradual recovery. In one case of acute infectious mononucleosis recovery seemed hastened following use of sulfanilamide.

In the matter of choice of preparation for use, it has seemed to us, up to this time, on the basis

of experimental and clinical observations as well as because of the factor of economy and ease of administration, that sulfanilamide orally is preferable. We have felt that it should be used in all cases unless contraindicated by vomiting or the presence of other factors. In the event that oral administration of the drug is impossible, either sulfanilamide or prontosil solution subcutaneously may be employed. The rectal administration of sulfanilamide may also be adopted if desired. While we have had no experience with intraspinal administration, reports would indicate that an 0.8 per cent solution of sulfanilamide may be successfully administered in this way; but prontosil solution, however, should not be used in this manner because of its irritant effect. The ease and rapidity with which absorption takes place following oral administration of sulfanilamide and subcutaneous administration of either sulfanilamide or prontosil solution, however, eliminates the difficulties and dangers of intravenous administration.

The work of Long and Bliss, together with that of Marshall, as well as our own experience, has enabled us to lay down some general precepts regarding administration, although each case presents an individual problem and we believe that the question of optimal dosage is not completely settled as yet. Long's^{12,13,14} studies on the bacteriostatic effect of a 1:10,000 concentration of sulfanilamide in vitro led him to the assumption that this should be a satisfactory therapeutic level in vivo and accordingly should be established as soon as possible in the treatment of severe infections. While we feel that such a concentration in the blood should be established early in cases of septicemia and severe infections, we have been impressed with the efficiency of lower concentrations, such as 5 to 7 mg. per 100 c.c., for example, in certain mild infections due to hemolytic streptococci and gonococci, and particularly in infections of the urinary tract. The ease with which high urinary concentrations of the drug are effected may explain the good results in the latter group.

Experience with large initial doses of sulfanilamide has led us to feel that the toxic effects which frequently occur may in most instances be diminished by extending the initial concentration period somewhat and we believe this procedure is advisable except in cases of fulminating infections in which an immediate and full therapeutic effect is necessary. In the treatment of se-

vere infections in adults we have felt that in most instances an initial dose of 75 to 90 grains (5 to 6 gm.) in twenty-four hours is sufficient, although in certain "fulminating cases" an even higher dose may be employed. Because absorption occurs from the gastro-intestinal tract in about four hours, this dose is best divided into six equal parts, one part being given every four hours. This method of administration should be continued until a satisfactory concentration of 8 to 10 mg. per 100 c.c. of blood has been reached or until clinical improvement ensues or signs of toxicity appear. If it is impossible to obtain a satisfactory concentration in the blood or therapeutic efficiency by oral administration, supplementary injections of sulfanilamide (prepared according to the method of Long and Bliss¹⁴) or of prontosil solution may be given subcutaneously. The dose is then reduced to 60 grains (4 gm.) in twenty-four hours, in four divided doses. Once a satisfactory concentration in the blood has been attained, it would seem that administration every six hours would suffice, and with less inconvenience to the patient. We have continued this dosage until we felt clinical improvement warranted its decrease, and we have then diminished the dose to 50 grains (3.3 gm.) or less in twenty-four hours. We have found it possible to continue this dose for a period of three to four weeks if necessary. In mild, subacute, or chronic infections, and in the treatment of adults weighing less than 100 pounds (45.4 kg.), a similar procedure is followed, but a small initial dose such as 60 grains (4 gm.) in twenty-four hours, is employed. In treating moderate or severe infections by the subcutaneous administration of sulfanilamide alone, we have usually given 24 grains (1.6 gm.) at eight-hour intervals.

We have felt for some time that the relation of prontosil to sulfanilamide is peculiar and as yet not clearly defined. If, as has been suggested, sulfanilamide is the active therapeutic factor in prontosil, we have been puzzled by the fact that excellent results have been obtained with 40 to 100 c.c. of prontosil solution daily (on analysis prontosil yields only 11 grains [0.73 gm.] of sulfanilamide per 100 c.c.). The conclusion seems inevitable that unless we wish to attribute these satisfactory results to this small amount of sulfanilamide, we must assume that prontosil is capable of producing some other chemotherapeutic actions in the body. We are conducting a clinical

study on these problems at the present time and we have been using prontosil solution alone or in conjunction with sulfanilamide in certain selected cases with good results.

We have had no fatalities from sulfanilamide therapy thus far, and have noted no permanent renal or hepatic damage. While its toxic effects are apparently mild as shown by Raiziss, Severac and Moetsch, we have considerable respect for them. Familiarity with untoward reaction and close observation of patients under treatment should permit detection of such reactions early enough to obviate serious trouble. Clinical experience with these toxic effects has led us to group them as mild, moderate, or severe. Mild toxic effects are general malaise (which is the effect seen most frequently), headache, anorexia, mild vertigo, tinnitus, and nausea. Moderate toxic effects may include the foregoing together with cyanosis (methemoglobinemia, which is noted quite frequently, or sulphhemoglobinemia), numbness and tingling (of the hands, face, or feet), skin manifestations (erythema multiforme, rash resembling measles), abdominal pain, diarrhea, fever, acidosis, and a toxemia resembling that of ethyl alcohol. Severe toxic effects frequently consist of the foregoing in association with: (1) a picture of severe toxicity, collapse, fever, and rapid pulse, (2) leukopenia or agranulocytosis, (3) hemolytic crisis, and (4) jaundice.

Early mild toxic symptoms are usually not difficult to handle and tend to subside in most instances if a moderate dose is continued or the dose is reduced. Moderate symptoms will at times subside on a reduced dosage, although discontinuance of the drug altogether is frequently necessary. It would seem that both mild and moderate symptoms resemble each other closely and this should serve to put one on guard against a more severe type of reaction. Treatment of severe toxic effects consists, aside from withdrawal of the drug, in: (1) forcing fluids, since the drug seems rapidly and practically completely eliminated in the urine, and (2) blood transfusions, particularly in cases of leukopenia or hemolytic crisis.

A decline in the carbon dioxide combining power of the blood has been noted in our cases as reported by Southworth, and actual acidosis at times occurs. The use of sodium bicarbonate 10 grains (0.65 gm.), with each dose of sulfanilamide, as suggested by Long and Bliss,¹⁴ may

of value in preventing acidosis, and as suggested by Helmholz and Osterberg, of value in increasing bactericidal activity in the treatment of infections of the urinary tract.

Summary and Conclusions

Sulfanilamide and prontosil exert a specific chemotherapeutic action on infections due to hemolytic streptococci, gonococci, meningococci, and organisms present in urinary tract infections with the exception of *Streptococcus faecalis*. The value of these drugs may be somewhat less in pneumococcal infections.

Certain toxic effects frequently follow administration of these drugs, but vigilance on the part of the attending physician tends to eliminate serious ill effects.

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TUMORS OF THE JEJUNUM*

JAMES A. JOHNSON, M.D., F.A.C.S.

Minneapolis, Minnesota

TUMORS of the jejunum, both malignant and benign, are comparatively rare; however, they occur frequently enough to engage our careful attention. Carter states that malignant tumors of the jejunum comprise approximately 1 per cent of all those occurring in the gastrointestinal tract. Benign growths are likewise rare and consist chiefly of adenomas, myomas and angiomas. Textbooks on surgery contain very little, if anything at all, on the diagnosis and treatment of tumors in this locality, except perhaps to mention that they are very uncommon.

The incidence of tumors of the small bowel as reported by various authors strikingly bears

out their rarity. In 1927 Hellstrom reported seventy-three cases of cancer of the small intestine, seventy of which he collected from the literature; no mention is made of their location. In 1930 Rankin and Mayo reported fifty-five cases of carcinoma of the small bowel, twenty-one of which were located in the jejunum. In June, 1936, Nettrour, Webber and C. W. Mayo found only thirty-one cases of carcinoma of the jejunum in the files of the Mayo Clinic, and stated that carcinoma of the small bowel represented only 0.62 per cent of all cancer of the gastrointestinal tract from the cardiac end of the stomach to the rectum; that cancer of the colon was about eighty times as frequent as in the small intestine. Geschickter from the Surgical Pathology Laboratory of Johns Hopkins re-

*From the Department of Surgery, The Nicollet Clinic, Minneapolis. Read before the Minnesota Academy of Medicine, May 12, 1937, St. Paul, Minnesota.

ported 178 benign tumors of the gastrointestinal tract, thirty-nine of which were found in the small bowel, fifteen being adenomas (polyp), ten argentaffine (carcinoid), six accessory pancreatic tissue, four myomas and four angiomas. He further reported sixteen cases of carcinoma of the small bowel, seven of which were in the duodenum, four in the jejunum and five in the ileum. In the University of Minnesota Pathological Laboratory files we find two cases of cancer of the jejunum in a total of 20,000 complete autopsies in adults. The average age is about fifty, and they occur twice as often in men as in women. Rankin's series had thirty-seven males and eighteen females.

All available data bear out the fact that tumors, both benign and malignant, are a rare finding in the jejunum.

In reviewing case reports it is evident that many of these growths occur so near the junction of the duodenum and jejunum that they present a difficult problem in surgical technic. It is my purpose, therefore, to discuss in particular the surgical treatment of this condition and to report four cases with operation and successful termination.

Etiology

The etiology of tumors in this locality is no more clearly understood than it is elsewhere. Since so large a majority occur in the upper part of the intestinal tract, it is quite probable that chronic irritation from various undigested foods may play an important role. Preëxisting polyps here as elsewhere undoubtedly undergo malignant changes. The rarity of malignancy in this locality is not easily explained. It should be remembered, however, that here there is very little stasis, and the intestinal wall is constantly being bathed by an alkaline fluid.

Pathology

From a clinical standpoint carcinomata of the jejunum are of three varieties: the annular constricting or stenosing type, which causes an early narrowing of the lumen with eventual obstruction; the flat infiltrating type; and the polypoid type, single or multiple, tending to bleed and produce intussusception.

Sarcoma may arise from the submucous, muscular or subserous coats. It does not as a rule penetrate into the lumen, but tends to assume

an external growth, either solid or more often cystic with areas of degeneration.

The benign tumors are chiefly adenomas, single or multiple. It is quite probable that some of these later become malignant. They grow into the bowel lumen and tend to ulcerate and bleed. Less common are carcinoid, accessory pancreatic tissue, myomas and angiomas. These rarely produce symptoms and are most often found at postmortem.

Symptoms

There is apparently no well-defined set of symptoms by which a tumor in the jejunum may be recognized. When the patency of the lumen is not impaired, the complaint is of an indefinite nature, often a vague gastric distress with weakness, loss of weight and fatigue. A secondary anemia may be present for a considerable period as was noted in Case 3, where this was the chief complaint for over a year. There is often epigastric gastric distress after eating and this not infrequently leads to a diagnosis of pathology in the gallbladder or duodenum. As stenosis progresses, it becomes evident that some type of high intestinal obstruction is present. There is loss of appetite, occasional nausea and vomiting after eating. Since the obstruction is below the ampulla, it is not infrequent to have vomitus of bile, and in some cases of pure bile, which was present to a marked degree in Case 2. Pain as a rule is not pronounced and is usually relieved by vomiting. When obstruction becomes complete either from a constricting carcinoma or a polyp which has caused intussusception, the symptom of pain and vomiting are violent enough to require immediate attention. Abdominal distention, if the obstruction is high, is naturally not present.

Diagnosis

It is difficult, if not impossible, to make a diagnosis unless some degree of obstruction is present. X-ray findings are almost entirely dependent upon this. A polypoid growth may be engaged in the peristaltic wave and result in an intussusception. An obstructing carcinoma produces as typical a picture here as elsewhere. When the lesion is well down in the jejunum, a dilated proximal loop can easily be recognized but when it is very close to the ligament of Treitz, it is often difficult to visualize any dis-

tion in the duodenum unless it is pronounced. Since pyloric lesions are much more common and the stomach in these cases retains the barium, a diagnosis of pyloric obstruction is frequently made. Lately a great deal of interest has centered about x-ray diagnosis of small bowel conditions, and it is quite probable that in the future lesions of this type will be more readily diagnosed.

Treatment

Preoperative preparation is important in all advanced obstructed cases. If there has been prolonged vomiting with lack of food intake and constant loss of body fluids, it is important to restore these to normal before proceeding to any surgical intervention. This can best be done by emptying the stomach with nasal suction and the administration of glucose and saline in proper amounts to restore blood chemistry to its normal level. If anemia is pronounced, it is well, here as elsewhere, to give a blood transfusion before or directly following the operation.

The operation consists of a thorough removal of the lesion and proper restoration of function by an end-to-end or side-to-side anastomosis. An adenoma, if there is no question of malignancy and it is pedunculated, can easily be excised through an opening in the bowel without necessitating a resection. If there is malignancy or if the bowel wall is compromised, a resection must be done. This is not any more difficult here than elsewhere in the small bowel if the growth is located far enough down; however, many are located at or so near the ligament of Treitz that such an operation becomes impossible. It is here that adequate restoration of the lumen becomes a difficult problem. The proximal loop is usually so dilated and edematous that an end-to-end anastomosis is not satisfactory, and in cases in which it has been done, leakage has usually resulted in a fatal termination. An anastomosis here must be very secure since any leakage of undiluted pancreatic juice soon increases the defect by its digestive action. As a result various types of operations have been employed. The proximal loop has been closed and a gastroenterostomy performed, which necessitates a regurgitation of bile and pancreatic juice into the stomach. Such cases usually survive but a daily gastric lavage often becomes

necessary. R. Franklin Carter in an article in the *Annals of Surgery*, December, 1935, recommends a side-to-side anastomosis of the distal end of the jejunum to the third portion of the duodenum. This appeals to me as a splendid procedure.

I wish here to present another method. Recently I encountered (Case 2) an annular carcinoma of the jejunum located so near the ligament of Treitz that only a very small stump of the proximal loop remained, when the growth was adequately removed. The proximal loop was very dilated and hypertrophied and would not permit a proper end-to-end anastomosis. I decided to employ a large-sized round Murphy button. The ends of the two loops were carefully purse-stringed over the button, being careful to tuck in the serous layer so that when it was closed, there was a firm and accurate anastomosis of the two ends. It was then reinforced by two layers of catgut in the serosa and muscularis, thus producing a tight, secure end-to-end closure. A continuous nasal suction was inserted for a few days. The convalescence was uneventful. I recommend this method in cases where the tumor is located so near the ligament of Treitz that a side-to-side anastomosis is impossible, or when the proximal loop is so dilated and edematous that end-to-end union becomes impossible or unsafe. A Murphy button properly inserted produces a safe, secure, anatomic and physiologic closure of the lumen.

Prognosis

The immediate result in operated cases in this locality has not been favorable. In a series of seventy cases reported by Hellström in 1927 there were forty-seven cases of resection with a primary mortality of 36.2 per cent. In twenty-three cases only palliative operations were performed with a primary mortality of 43.5 per cent. Of the thirty cases that survived the operation nine died within a year and only nine were well and free from symptoms fourteen months or longer after the operation. In thirty cases reviewed by R. Franklin Carter there were twenty-four in which resection was done with an operative mortality of 43.4 per cent. In fifteen cases end-to-end anastomosis resulted in six deaths, while six cases with side-to-side anastomosis all lived. In four cases the type of operation was not mentioned; two died. In 1930

Rankin and Mayo reported twenty-one cases. No patient lived longer than three years and the average was less than one year. In reviewing

that this was an adenomatous non-malignant growth. Her condition was poor and 600 c.c. of acacia were given during the operation, and following the operation



Fig. 1. Case 2. X-ray showing obstructing carcinoma near the ligament of Treitz with dilated proximal loop.



Fig. 2. Case 2. Resected jejunum showing annular carcinoma with adjacent glandular metastases.

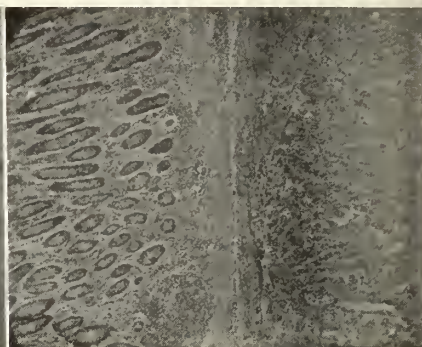


Fig. 3. Case 2. Microphotograph.

case reports it is evident that the greater mortality is present in those in which the end-to-end operation has been done. The end-result of course, as elsewhere, depends upon the degree of malignancy and the time it has been present before operation.

Case Reports

Case 1.—On February 27, 1935, I was called in consultation by Dr. H. W. Quist to see Mrs. G. H., aged thirty-five, who had been admitted to the hospital February 23 with an attack of severe epigastric pain. Dr. Quist, her family physician, had attended her for several such attacks since August, 1934. He said they were typical of gallstone colics and had always subsided after hypodermics of morphine. Following each attack, however, she had neglected to come in for x-ray studies. Her present attack began during the night of February 22, when she was sent to the hospital. This was promptly relieved by a hypodermic of morphine. Temperature and pulse were normal, but during the day she continued to vomit. On February 24 she passed a bloody stool and a mass was felt in the left upper abdomen. It was thought that she was bleeding from a duodenal ulcer, but this did not explain the mass, so an intravenous urogram was made, which showed a normal kidney. There was, however, a suggestion of gas in the duodenum. A small amount of barium was then given, which clearly demonstrated a dilated duodenum with obstruction in the upper part of the jejunum. Operation was advised. Intravenous glucose in saline was given before the operation.

Operation revealed that about four inches from the ligament of Treitz there was an intussusception with gangrenous bowel. A resection was done with a side-to-side anastomosis. On opening the resected bowel, a papillary growth with a necrotic polyp was located on the bowel wall. The pathologic report later showed

a blood transfusion was administered. She made an uneventful recovery and has remained well to date.

Case 2.—Mr. G. F., aged sixty-three, was admitted to the Eitel Hospital September 13, 1936. His past history was essentially negative. He stated that he had had indefinite symptoms of indigestion and epigastric distress for the past year of a gradually increasing nature. He had lost 40 pounds in weight. On July 27, 1936, he had had an x-ray examination of the gallbladder, which seemed to be normal. X-ray of the stomach showed a 20 per cent retention at the end of six hours. His free hydrochloric acid was 8. A diagnosis of duodenal ulcer was made and he was put on treatment. However, he had no relief, and on September 1, 1936, he again had an x-ray examination of his stomach, which showed a retention of about 35 per cent at the end of six hours. When he entered the Eitel Hospital on September 13, 1936, his condition was fair except for loss of weight. There was no palpable mass in the abdomen. Hemoglobin was 84 and red blood cells 4,700,000. General examination was essentially negative. X-ray of the gastrointestinal tract revealed considerable dilatation of the duodenum, which extended to about 3 inches beyond the ligament of Treitz, at which point there was an annular constriction in the jejunum, which Dr. Ude considered characteristic of a malignant tumor infiltration and made a diagnosis of carcinoma of the jejunum with partial obstruction. At the end of six hours there was a moderate retention of barium in the duodenum.

At operation September 18, 1936, a large annular carcinoma of the jejunum was found about 3.5 inches from the ligament of Treitz, the growth apparently almost completely obstructing the bowel. The proximal loop was very much distended and edematous. There was an exudate about the carcinoma and it was apparently not far from perforating. The mesenteric glands were extensively involved but there were no distant metastases. The growth was widely removed, to-

gether with the involved glands. An end-to-end anastomosis was made with a large, round Murphy button. The serosa and muscularis were sewed around the but-

on October 12, 1936. She had some weight loss and moderate pallor was present. Hemoglobin was 70, red blood cells 4,330,000, with considerable deformity of



Fig. 4. Case 3. Resected jejunal loop with proliferating sarcomatous tumor.

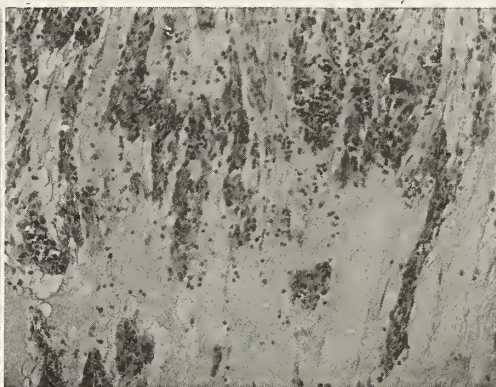


Fig. 5. Case 3. Microphotograph.

ton with two layers of chromic catgut. His convalescence was uneventful.

Pathologic report by Dr. Wm. O'Brien revealed adenocarcinoma of the jejunum with metastasis to regional lymph nodes.

On September 28 a film was made of the abdomen and the button was still in its original position. He was discharged from the hospital and continued to remain on a semi-solid low-residue diet. On October 28 the button was felt in the rectal pouch; on October 31 it was removed. He has continued without symptoms and has regained his normal weight. An x-ray study of the operative field on April 29, 1937, shows that there is a normal function of the loop without any retention.

In this case it would have been impossible to do an end-to-end suture. The proximal loop was very short and so dilated and edematous that leakage was certain to follow any such procedure. A very large button had to be used to accommodate the dilated proximal loop. There were no symptoms while it passed through the intestinal canal, but he was unable to pass it when it reached the rectal pouch. It was easily removed through a large proctoscope.

Case 3.—Mrs. L. B., aged fifty-seven, had been treated for a secondary anemia for the past eighteen months. She stated that in April, 1936, she had had an attack of abdominal distention with cramps, which lasted for two days. After the abdominal distention disappeared, she felt a mass in the left lower abdomen. She remained well during the summer, but on September 26, 1936, she had another attack, at which time she consulted her family physician, Dr. Oliver Porter, who immediately sent her in for examination

the red cells—apparently a secondary anemia. There was a movable firm rounded mass in the left side of the abdomen which, when she was lying down, was in the upper left abdomen, but when she stood up, extended down below the navel. The general physical examination was otherwise negative except that she was a thin, visceroptotic individual. A barium enema was given and there was no evidence that the tumor involved the colon. She was admitted to the Eitel Hospital on October 14, 1936.

At operation October 15, 1936, a large firm mass was found in the jejunum about seven inches below the ligament of Treitz. There was a large mass outside of the bowel to which there were numerous omental adhesions. There was a mass about the size of a walnut in the right lobe of the liver close to the gallbladder. On the top of the right lobe there was a good deal of hardness and a deep mass could be palpated. There were numerous glands in the mesentery involved. Stomach, duodenum and pelvis were normal. A wide resection of the growth was done with a side-to-side anastomosis.

Pathologic report by Dr. Wm. O'Brien showed that the tumor was outside of the muscular layer of the bowel. It apparently arose from the serous or subserous tissue. It infiltrated into the muscular layer but was well demarcated. Diagnosis was that of a sarcoma, presumably a neurosarcoma.

Postoperative convalescence was uneventful. She left the hospital November 7, 1936, and has been in fair health since without any evidence of food distress or symptoms of obstruction. The expectancy of course cannot be long with liver metastases present.

Case 4.—Mrs. L. B., aged thirty-six, was admitted to the Eitel Hospital January 8, 1937. She stated that in June, 1936, she had developed a dull pain in the region of the navel, which later radiated to the epi-

gastrium and to the back. These attacks occurred about every two to three weeks and lasted about three hours. They were increasing in severity and at various

Pathologic report by Dr. Wm. O'Brien showed no evidence of malignant changes and revealed only a large polyp with ulceration.



Fig. 6. Case 4. Resected ulcerating adenoma.

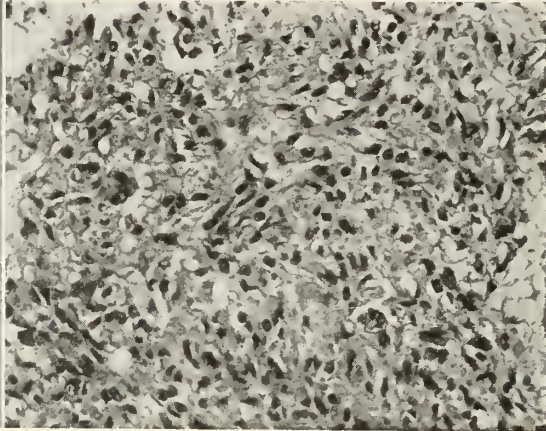


Fig. 7. Case 4. Microphotograph.

times she had vomited. Between attacks she had a good deal of epigastric distress, which appeared about one hour after meals. She feared to eat and had lost 20 pounds in weight. Recently a thorough examination had been done elsewhere and a diagnosis of nervous bowel had been made. On examination there was a slight pallor and evidence of emaciation. She had a worn, anxious expression. The abdomen was tender to the right of the navel. Hemoglobin was 70 and red blood cells 4,000,000. Urine was negative. X-rays of the kidneys were normal. X-rays of the gallbladder showed impaired function with a single stone. Gastrointestinal x-ray showed a normal stomach and duodenum. At the end of six hours there was a trace remaining in the stomach and irregular distribution of barium in the small bowel, with some areas of dilatation and stasis. X-ray of the colon was normal. A diagnosis of cholelithiasis was made and operation advised. It was also decided to do a thorough exploration of the small bowel.

Operation January 22, 1937, revealed a thick-walled gallbladder containing a solitary stone. A typical cholecystectomy was done. The colon was palpated. There was no evidence of any pathology. Pelvis was normal. Examination was then made of the entire small bowel beginning at the ileocecal valve. About four feet above the ileocecal valve there was an area of thickened bowel with some distention. There was increased vascularity of this part and some enlarged glands in the mesentery. No lesion inside of the bowel, however, could be felt. At a point about four feet from the ligament of Treitz there was a movable mass in the bowel. The bowel was opened and on examination a pedunculated growth was found, part of which was ulcerated. It was widely attached to the bowel wall and looked as if it were probably malignant. The growth was widely resected and a side-to-side anastomosis was done.

Convalescence was uneventful. On April 12, 1937, she was examined and stated that she had been constantly gaining weight and that she felt well. All her previous symptoms were gone.

Summary

1. Tumors of the jejunum probably comprise about 1 per cent of all those occurring in the gastrointestinal tract.

2. When an unexplained high obstruction is evident and no cause can be found in the pylorus or duodenum, it should be remembered that tumors may be present in the jejunum.

3. A simple, safe method of end-to-end anastomosis is here recommended in cases that are located so near the ligament of Treitz that the usual operative procedures are either too dangerous or impossible.

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THE SIGNIFICANCE OF GLOMERULAR NEPHRITIS IN CHILDHOOD*

JESSIE M. BIERMAN, M.D.

Director, Child Welfare Division, Montana State Board of Health
Helena, Montana

THE significance of acute glomerular nephritis in childhood has been a subject of controversy for years. If the disease runs a definite course with a low mortality and consistently goes on to complete recovery, as many observers contend, it is of little significance, but on the other hand if the acute nephritis of childhood is connected directly or indirectly with the various types of chronic nephritis of childhood and of chronic nephritis appearing in later life, it is highly significant.

As early as 1897, the senior Holt expressed his conviction that the acute nephritis of childhood not infrequently leads to chronic nephritis and warned against giving a uniformly good prognosis. Holt's views were based on careful clinical observations extending over many years of practice. He and his followers, however, lacked a method by which they could prove this contention and, as a result, the view generally held by the profession has been that if a child survives his acute nephritis his chances for complete recovery are very good.

Ordinarily, the diagnosis of acute glomerular nephritis is based on the sudden appearance of red blood cells, casts and albumin in the urine accompanied by some edema and rise in blood pressure either during or following some acute infection such as tonsillitis or scarlet fever. In a majority of the cases, the symptoms gradually subside, the urine clears in the course of a few weeks and the child seems well in every way. Many observations on large groups of these cases have been made within the past few years by competent investigators such as Aldrich,² Blackfan,³ and Guild,⁴ using the usual methods of follow-up on children known to have acute nephritis, and they all conclude that a good prognosis is warranted.

But since the report by Addis¹ in 1925 of a more adequate method for studying the urine, evidence has been accumulating to strengthen Holt's views and to add immeasurably to our

understanding of all types of Bright's disease. Following the discovery of the microscope, many studies of the formed elements of the urine were made in health and disease and a new diagnostic aid resulted. Then the examination of the urine was turned over to the laboratory technicians and we soon forgot what Bright knew back in 1827.

The idea that he might learn something important from a systematic and continued study of the sediment of the urine seemed attractive to Addis. It seemed plausible that urine from an actively inflamed kidney should carry with it formed elements characteristic of the process of inflammation.¹

Acting on this hypothesis, he made a study of the effect of various physical factors on the formed elements of the urine. He found that casts and red blood cells rapidly disintegrate in a dilute or alkaline urine and believed these facts might well account for the variability in results obtained in examining consecutive specimens, and this proved to be the case. Urine voided after drinking and eating is unfit for any kind of sediment examinations. This principle applies equally as well to the routine urinalysis as to the Addis count. The "sink test" is as good as any other for a dilute alkaline specimen. For routine work, the first urine voided in the morning is far superior for examination purposes as it is ordinarily concentrated and acid.

Furthermore, Addis felt that valuable information regarding the extent and activity of the kidney lesion might be learned from a quantitative study of the formed elements excreted in a given period. His method of studying the urine is now called the Addis sediment count or concentration method. It is carried out on a twelve hour specimen of urine which is rendered acid and concentrated simply by restricting the fluid intake the day preceding the test. After timed centrifugalization, the sediment is transferred to a blood counting chamber, the various formed elements identified and counted and computations made on a twelve hour basis.¹

*Read before the annual meeting of the Medical Association of Montana, Great Falls, Mont., July 14, 1937.

By this means Addis and others have followed glomerular nephritis from the initial phase through latent, degenerative and terminal stages to the final episode of uremia.

As a result of these studies he has established the existence of a latent stage during which casts, red blood cells, epithelial cells and albumin are excreted in abnormally large amounts for periods varying from a few months up to twenty years or more, thus demonstrating a continuing activity of the renal lesion. During this period the patient remains in apparent good general health, and the ordinary tests for kidney function and the usual routine urinalysis show nothing abnormal. In speaking of kidney function tests such as excretion of phenolsulphonephthalein, blood urea determinations, et cetera, it is well to recall that these tests continue to give negative results until at least half the normally functioning kidney tissue is destroyed.

The studies of Addis have established four stages in glomerular nephritis:

(A) The *initial* stage follows an acute infection which may have been definite or so mild as to have escaped notice. In its more severe form, it is characterized by gross hematuria, giving the urine a mahogany brown appearance, edema, vomiting, headache, some elevation of blood pressure and occasional severe prostration and convulsions. This initial stage, severe or mild, may go on to healing or continue to the advanced stages.

(B) The *latent* stage is asymptomatic but can be diagnosed by the continued excretion of abnormal numbers of red blood cells, casts and albumin. The numbers of these elements in the urine are usually so few as to be entirely overlooked by ordinary urinalysis. This accounts for its failure to be recognized by earlier workers. The concentration technic of Addis is necessary to establish the diagnosis of the latent phase and to get a true picture of what is going on in the kidney. The duration of this stage is variable—lasting from a few weeks to many years. It may terminate in healing within two years or go on to the degenerative and terminal stages. Not infrequently during the latent stage intercurrent infections such as a common cold, a slight sore throat, or, following tonsillectomy, a transient exacerbation of gross hematuria occurs. During these exacerbations, the patient

may consult a physician, who will diagnose nephritis for the first time. The repeated appearance of transient hematuria with slight infections which seemingly disappears is strong evidence of an underlying latent nephritis. Is it not possible that the "low reserve kidney" so frequently referred to in connection with the milder toxemias of late pregnancy may not represent this latent stage of nephritis just as the true nephritis toxemias occur in patients whose nephritis has proceeded to the later stages of the disease?

(C) The *degenerative* stage is characterized by marked albuminuria with large numbers of casts, epithelial cells and leukocytes, together with a small but still discernible excess of red blood cells in the urine. In such cases a decrease in serum albumin, increased plasma lipoids and general edema may occur, but is not invariable. Here again the Addis method is necessary to detect the increase in red cells upon which a correct diagnosis depends. Otherwise the case is likely to be diagnosed as "nephrosis." The differentiation is important as in degenerative glomerular nephritis the prognosis is very bad and in the true lipid nephrosis of Volhard and Fahr,⁹ it is good.

(D) The *terminal* stage is characterized by the appearance of headache, vomiting, retinal changes, hypertension and azotemia, together with increased amounts of albumin, blood, epithelial cells and casts in the urine. Its duration may be a few days or many months.

Using the Addis technic, Snoke at Stanford University Medical School studied a large number of cases of glomerular nephritis in children from the initial stage through to healing or to eventual renal failure. The author, working at the renal clinic of the Children's Hospital in San Francisco, has studied a smaller series. Recently Snoke⁷ published the results of his studies and those of Addis on 178 cases observed in the Stanford clinic from 1920 to 1936. Of this number, 110 were followed from the initial stage and 40 per cent were found to have healed, 39 per cent were still in the latent stage, 5 per cent went on to the degenerative stage and 16 per cent were either dead or in the terminal stage. At the Children's Hospital our series numbered 35 patients followed from one to five years, but our figures were comparable—less than 40 per cent showing satisfactory evidence of complete

healing during the period of observation and over 50 per cent still in the latent stage or having gone on to the advanced stages or death.

In our studies of nephritis in children, we were impressed as have been other observers⁵ by the apparent good health of patients with varying stages of acute and chronic nephritis. Nothing in the history or physical examination gives any indication of the presence or extent of renal damage which only an adequate urinalysis can give. A point worth emphasizing is that the physical examination of any child is incomplete without a careful urinalysis.

As has been noted by most observers, infections of the upper respiratory tract,⁶ including tonsillitis, pharyngitis, otitis media and cervical adenitis, are by far the most common infections antecedent to glomerular nephritis in childhood. Scarlet fever is an important cause even though it does not account for as great a number of cases. It is hoped that observations made during the widespread prevalence of scarlet fever during the past two years will add valuable information on this point. It is certain that many cases of nephritis will be missed unless careful and repeated urinalyses are made on patients recovering from scarlet fever. A point which is frequently overlooked is that symptoms of nephritis and urinary changes usually do not appear for two, three or more weeks after the initial infection.

Regarding the *treatment* of glomerular nephritis, there is nothing especially new. Insofar as possible we applied the master principle of all treatment—rest. Resting the kidney means giving it the least possible work to do, and this principle can be applied as a possible prophylactic measure during all acute infections in which it is reasonable to assume an extra load is being placed on the kidney. Plenty of fluids, particularly the citrus fruit juices, which tend to maintain the urine at the neutral point where the kidney seems to work with maximum efficiency; avoidance of known irritants in the diet such as the extractives and purine bodies in meat and legumes, salt, condiments, and the irritating diuretics. Water is the best diuretic and was given freely during the early stages even in the presence of edema. There is no evidence that withholding water during acute nephritis will lessen the edema. The normal protein intake

should be maintained and if much protein is being lost in the urine this should be compensated for by additional protein in the diet. Milk is the most acceptable form of protein. During the acute stage the diet may well consist of milk, fruit and vegetables and citrus fruit juices. The blood pressure was checked frequently and if it began to rise or toxic symptoms such as drowsiness, headache, vomiting or convulsions appeared, magnesium sulphate given intravenously and by mouth if possible, as suggested by Blackfan,³ were found very effective. Our patients were given long periods of convalescence.

During the latent stage, every attention was paid to clearing up foci of infection and the prevention of recurrent infections. A full properly balanced diet was given and the child's general health improved in every way possible. During the later stages no treatment seems to alter the eventual outcome, but as noted by Aldrich² these patients seem to do better and are much happier on full diets and as near a normal mode of living as possible. Nothing is gained by making invalids of them prematurely.

Summary

Recent studies on glomerular nephritis in childhood employing the Addis technic of follow-up:

1. Indicate that the initial stage of glomerular nephritis is frequently missed because of the mildness of the symptoms, giving rise to the widespread opinion that chronic nephritis has no connection with the acute form.
2. Establish the presence of a latent stage of the disease which may last for years and in which the child is clinically well.
3. Indicate strongly that this latent stage is a connecting link between acute glomerular nephritis and the chronic forms of the disease.

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BACK INJURIES AS AN INDUSTRIAL DISABILITY*

J. R. KUTH, M.D.

Duluth, Minnesota

BECAUSE of their frequency and importance, the present discussion of back injuries is limited chiefly to those of the lower portion of the back. Falls from a considerable height, violent direct blows, severe torsion, and severe flexion and extension injuries of the back, account for the severe lesions of the bony spine, the cord and their neighboring structures. With increasing knowledge and present-day aids in examination, we have become fairly familiar with these injuries and their treatment. The evaluation of damage to the structures and the resulting disability can be made objectively and usually presents no serious difficulty. With these injuries I am not concerning myself in this discussion.

A great number, however, of back injuries encountered in industrial and other accidents are not of this severe type. They are usually injuries of the lower back and may be produced by similar but less violent forces, and usually follow a heavy lift or sudden twist or an unguarded movement of the body, and in general suggest a strain or sprain of the joints of the lower lumbar vertebræ, the sacrum and the ilia or of the neighboring muscles. It is these cases that frequently lead to prolonged and often unexplained disability. Strain of muscles or ligaments results from overstretching. It may be acute or chronic. In the chronic form we see this strain resulting from faulty posture and faulty body mechanics, and prolonged use of the body in a faulty or cramped position, as may be required in certain occupations. Sprain of a joint results from movement beyond the normal range of the joint, thus producing a stretching and tearing of ligaments. There occur bleeding, clotting, granulating and eventually healing by scarring. Careful consideration of the accident, the manner in which the force was applied, location of the tender area and movements which cause an aggravation or an easing of the pain, may aid in determining the ligament or muscle injured. Rest and protection

of the injured area for a period of about six weeks, followed by gradually increasing movements and use of the injured structures, suffice for recovery in most cases. Slight injuries require a shorter time, while the more severe or multiple tears require a longer period of protection and a longer time for recovery. Recovery from such strains and sprains should occur as does recovery from similar injuries in other parts of the body. With return of normal back movement, and the disappearance of muscle spasm, the average individual should be able, to some extent at least, to resume his former activities.

Illustrative of a type of back injury that I have in mind is the personal experience, as detailed in one of his letters, of Erasmus of Rotterdam in 1514. While traveling from Calais to St. Omer, where he had spent a couple of days with his old friend, the Abbot of St. Bertin, he writes:

"Scarcely had I left a certain inn which lies halfway between Roulers and Ghent, when my horse shied at some white clothes which were spread on the grass and, while I was bent over to say something to my servant, the animal bounded in the opposite direction, and so twisted the end of my spine that I was compelled to cry out, so intolerable was the pain. I tried to dismount, but I could not, so my servant placed me on the ground by allowing me to lean on him, while the pain continued atrociously, especially if I bent over. I suffered less when erect, but I could not straighten up when once I had assumed a bent posture. There I was in the open country with no inn to go to but one which was most cold and uninviting, and I was six long miles from Ghent. I felt the pain less in walking, and yet it was too long a journey for even a sound man to accomplish on foot. Imagine my state of mind. I made a vow to Saint Paul to finish my commentary on the Epistle to the Romans if I could only get out of this fix. A little while after this I was driven in desperation to try whether or not I could mount my horse, and succeeded beyond my expectation; I amble slowly, and find I can bear it; I order the servant to go a little more quickly, and still stand it well, but not entirely without pain. Well, I reach Ghent, dismount and get to my room; but thereupon the pain starts all over again, especially after the lull. I cannot stand except when supported on either

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side in an erect position and firmly; for if I bend over to the slightest degree then that intolerable pain returns. Nor could I sit up, and when lying down I could not move at all. I send for the doctor and apothecary. I was so done up in every way that I thought of nothing but death.

"In the morning, while preparing to relieve nature I try to get out of bed, and am successful; I stand, I move, I sit and without assistance. I give thanks to God and Saint Paul. There remains still a slight soreness from which I am not yet free."²

It is in this type of back injury, as described by Erasmus, that we often find recovery to be excessively slow or even doubtful. Individuals young, middle-aged and elderly return to the doctor with monotonous regularity to have their backs taped, to lie under hot lamps, be treated by diathermy, et cetera. They seek out one doctor after another and are sent from one examiner to the other. Insurance companies complain of difficulty in obtaining a correct diagnosis, if a diagnosis at all, in these cases, and comment on the great divergency in the diagnoses given. From the hodge-podge of a great number of these cases they conclude that one method of treatment is as good as another and dispose of these cases by compromise as well as they can, in over 75 per cent of the cases. It is these cases which, as Osgood aptly says, leave a sense of confusion in our minds. He adds, "Until we sense this confusion we cannot begin to be clear headed."³

Obviously, it is only by a most painstaking, careful and thorough examination, and often by reexamination at intervals, that some if not all of this confusion can be dispelled, the injuries more properly evaluated and therefore better treated.

Examination

Careful and painstaking examination should comprise the following:

1. A careful history of the accident, the kind of force, its severity and direction, and manner in which it was applied.

2. A careful history of previous back injuries and previous back disabilities, especially of previous recurring attacks of so-called catches or cricks and lumbago. Likewise, a history of past infection.

3. Examination of the patient stripped.

(a) Observation of the general nutrition, build and musculature, noting any static defects

or abnormalities and deformities, the gait, postural abnormalities, body lists, et cetera.

(b) Location of pain and points of tenderness, manner in which pain radiates. It is well to have the patient himself outline with his finger the points and areas of pain and tenderness.

(c) The range of back movement, whether movement is limited actively or passively, and the direction in which it is limited; the effect of movement on pain, whether it aggravates or relieves the pain; the presence or absence of muscle spasm during movement of the back should be noted, remembering that spasm of a muscle is an objective and very persistent condition, and not to be confused with normal, voluntary or obviously purposeless muscle contraction. Examination as to back movement should be carried out with the patient in the standing and in the sitting position.

(d) The lower extremities are examined for movement, size, length and condition of muscle and vascular structures. No examination of these cases should be concluded without applying the various well recognized signs and tests described by Trendelenburg, Goldthwaite, Gaenslen and Ober, as well as the application of the straight leg raising test.

(e) At least a minimum, but careful, neurological examination, including muscle function, sensation, the reflexes, state of equilibrium and ocular reflexes, is important in all cases. Where definite nerve lesions are uncovered, a thorough and complete neurological examination is most important. In selected cases this should be supplemented by the Queckenstedt test and perhaps by lipiodol filling of the lower spinal canal for x-ray visualization of obstructions or deformities.

(f) Routine examination of the mouth and throat, and probably in many cases of the sinuses as well, for foci of infection, and rectal examination of the prostate and the sacrum should conclude the physical examination. In certain cases further clinical and special laboratory examinations may be necessary.

(g) X-ray examination should be undertaken in all cases of low back injury which at the end of two to three weeks show no progressive improvement, and in all individuals past forty such examinations should be made sooner. The films should be technically good, and show the injured area in two planes, and, when possible, in an

oblique plane (so-called three-quarter oblique view) to visualize the small joints formed by the articular processes. Films taken with the patient in the lithotomy position may show the lumbo-sacral joints to better advantage. Stereoscopic films are generally helpful and frequently quite important. In some cases it is important to retake films which are apparently negative.

The general behavior of the individual during the examination is, at times, helpful in the final summing up of the case.

Physical Findings

Following some such examination as briefly outlined, one may encounter conditions which may or may not have a bearing on injuries, complaints or disability in question. One may find no objective evidence of injury or disability.

1. An obviously poor state of health, especially if associated with progressive loss of weight, should arouse suspicion of serious systemic disease or local disease of the spine which may or may not be related to a perhaps slight and trivial back injury. Important in this connection are tuberculosis, other serious infections, and neoplasms of the spine.

Flat-foot or a short leg or stiffness and deformity in the larger joints of the lower extremities may cause chronic strain in the lower back which, when an acute traumatic strain is added, will account for slowness of recovery from such injuries. Persistent faulty posture as well as occupational strain can similarly prolong disability after injury. Body list to one side, more or less fixed, is indicative of muscle or joint lesion.

2. Persistent local pain and tenderness which is constant as to location suggests the seat of a lesion, traumatic or otherwise. Radiating pain is frequently complained of. Radiation of pain from the lower back into the buttocks or thigh (so-called sciatic pain) is often found associated with a body list either toward or away from the painful side.

3. Stiffness is a common sign of back disease or injury. The passively stiff back—so-called poker back—is frequently found in chronic, ankylosing arthritis from infection and in the so-called Strumpel-Marie or rhizomyelitic type of ankylosing spondylitis. In the latter type the hips and shoulders are frequently involved in a similar ankylosis. With complete ankylosis,

these backs are usually painless and without muscle spasm. The x-ray appearances of these lesions when fully developed are usually characteristic. Early in the acute stage of infectious arthritis pain, stiffness and muscle spasm exist without demonstrable changes in the bony spine on x-ray examination.

In the back with limited movement only, one may see a small section of the spine—one or two joints—fused by reason of previous injury or disease. Degenerative changes or developmental disorders of the spine may account for some cases of limited movement. More often, the limitation of movement is due to spasm or to structural shortening of muscle groups and ligamentous structures. It is in this latter group that one finds associated limited movement in the lower extremities elicited by certain tests and maneuvers.

4. The radiating pain, especially pain with so-called sciatic distribution, is a common symptom in many low back lesions. It should be distinguished from a true neuritis and should be considered as a symptom only. Persistent muscle group weakness or persistent anesthesia in an extremity or in the peri-anal (saddle) area in chronic and recurring post-traumatic low back pain suggest:

(a) Pressure on a nerve root by spinal anomalies, displacements or productive lesions.

(b) Pressure on the cord or cauda equina by neoplasms within these structures or arising from neighboring bony or soft structures.

(c) Pressure within the spinal canal from displacement of a calcified or dislodged nucleus pulposus or the protrusion of an intervertebral disc.

(d) A true neuritis of the sciatic nerve as a manifestation of an infection in which the back may also be involved.

(e) The darting and radiating pains of tabes.

A true sciatic neuritis is probably very rare. Progression of symptoms without intermission suggests malignancy.

5. Infections, general and specific, are well known causes of acute and chronic low back pain and disability. Of these, Pott's disease, because of its own importance, and the difficulty of its diagnosis early in adults, should always be considered. Post-typhoid infection, osteomyelitis and syphilis of the spine are rare. Examination of the stripped patient may reveal an acute gon-

orrheal infection which might otherwise be overlooked and which may play an important part in an actual or alleged back injury. Certain forms of progressive arthritis, especially of the ankylosing type, may result from a focus of infection. A certain number of cases of chronic low back pain, post-traumatic and with a tendency to recurrence, are at times improved or completely relieved by removal of such foci of infection. It is, however, a matter of every-day observation that in many of these cases of post-traumatic low back disability we find the symptoms continue after the removal of all foci, real and suspected. Removal of obvious foci of infection is warranted in many of these aggravated cases. Careful general physical examination with adequate laboratory assistance is important in uncovering latent and hidden foci of infection.

6. The x-ray in the post-traumatic back may disclose:

(a) No obvious deviation from what may be considered a standard for the normal. This does not preclude the presence of lesions (acute arthritis, Kümmel's disease, slipped fibrocartilage in the joints of the articulating processes, early tuberculosis or malignancy before bone changes are evident, *et cetera*). Subsequent x-rays taken at intervals of several months may reveal osseous changes.

(b) Congenital anomalies (alterations in size and shape and sacralization of the transverse processes of the fifth lumbar vertebra, spina bifida, articulations between spinous processes, alteration of the size and shape and direction of the articular facet, *et cetera*).

(c) Displacements (spondylolisthesis, displacement of intervertebral discs, small tear fractures of bodies, *et cetera*).

(d) Developmental changes in the bodies (congenitally wedged vertebrae, osteochondritis, protruded nucleus pulposus and subsequent alteration of the bodies associated with the names of Schmorl and Scheuermann, *et cetera*).

(e) Ankylosis (from preceding disease or injury).

(f) Destructive lesions (tuberculosis, typhoid fever, tumors, fibro-cystic disease).

(g) Proliferative changes (osteomyelitis, syphilis, Charcot joint). Also hypertrophic changes noted on the edges of the vertebral bodies of the so-called hypertrophic or chronic osteoarthritis.

(h) Changes about the sacro-iliac joints and ilia, spurring, fusion, areas of destruction (tumors, tuberculosis, osteomyelitis, condensing osteitis, *et cetera*).

It has been estimated that anomalies of the lumbo-sacral area are more frequently met with than not. Of these anomalies, some are probably a source of strength and others a source of weakness. Accessory joints in areas of less than normal movement are more easily injured and would recover from such injury more slowly than otherwise. Proliferative changes in the smaller joints, that is, of the articular processes, are undoubtedly of greater significance than similar changes in the larger joints between the vertebral bodies. A slipping forward of the body of the fifth lumbar vertebra on the sacrum is occasionally detected on physical examination and noted in the x-ray film. This condition (spondylolisthesis) to be produced accidentally at one time would require great force, and could be presumed to cause immediate severe total disability. In most cases, the condition is dependent on a congenital weakness or anomaly of the fifth lumbar vertebra and is usually produced gradually as a static deformity. It is not infrequently met with in x-ray films of individuals who have had only a comparatively slight injury which was followed by mild or moderate disability. In these cases the condition existed at the time of the accident in question and was not caused by it.

Very commonly, in persons past forty, with or without previous back disability, one sees changes at the edges of the vertebral bodies, the articular processes or the sacro-iliac joint margins, consisting of spiny outgrowths or spurring, and usually referred to as chronic hypertrophic or osteoarthritic changes. These changes are essentially degenerative in character, depend more on senescence and abnormal wear than they do on infection or other causes. Certain it is that, in a generalized form, they are not traumatic in the sense that they are due to one single severe trauma. Early x-rays usually show the changes advanced to a degree inconsistent with the brief period of time between the accident and the taking of the x-rays. These changes, when moderate, may cause but little, if any, discomfort or disability. They may limit movements of the back more or less, but rarely do they go on to complete ankylosis. When these changes are

marked in the spine, the back movements may show severe limitation. These backs undoubtedly are more susceptible to strain and injury (or fracture of a spur) and when so injured are slow to recover. They probably account for most of the cases of low back disability following comparatively trivial injuries.

This so-called "hypertrophic arthritis" should not be confused with a process of rapid fusion of the lateral apposing margins of the vertebral bodies by large, thick "crescents" or "spangles" in individuals between the ages of twenty and forty and which represent a true infectious spondylitis.

Traumatic or other lesions of the sacro-iliac joint are evidenced by pain and tenderness over the joint and aggravation of the pain and tenderness by movement of the ilia on the sacrum, as elicited by tests which spread or compress the ilia or which cause a forward and backward rocking of the ilia on the sacrum. In disease of the joint, the x-ray may reveal the lesion (tuberculosis, arthritis or osteitis of the ilia). In the supposedly traumatic lesions, x-ray, as a rule, shows nothing obviously abnormal. The sacro-iliac joint has movement and therefore may be strained or sprained, but subluxations, if they do occur, are generally impossible of definite demonstration. Occasionally there may be noted sufficient displacement of pubic bones at the symphysis to suggest subluxations or abnormal looseness of the joint. Following severe violent accidents considerable dislocation may be seen at the sacro-iliac joints in the x-ray. This condition, however, not under consideration here, does not cause the complaints and physical findings of chronic low back injury.

The Objectively Negative Back

Those patients who, after repeated, thorough examinations, show no objective abnormalities, or only minor ones, but persist in their complaints, form a troublesome and often trying group which plague the doctor. Outstanding in this group is the apparent excessiveness of complaint and the disproportion of the complaints to the physical findings. In these patients, the complaints which have persisted unduly long do not conform to the experience in other cases with similar back accidents. In certain ones there has developed a neurosis, in others an unfavorable mental attitude, while a few are made up of malingerers.

1. The hysterical back betrays itself by its highly dramatic quality, manifested in peculiarity of posture and gait, nondescript tremor, excessive perspiration, general anxiety and an unbearable tenderness on the slightest pressure. Added to these, one finds other stigmata of hysteria. From this extreme there are other cases less dramatic but which, on careful review of the accident, the varied and excessive complaints, the general background and behavior of the patient, lead to the diagnosis of an underlying neurosis.

2. The unfavorable mental attitude, in which the thought of compensation and the struggle between employee and employer become fixed ideas, is an obstruction to recovery. These form a group which present a problem in low back injuries. During a fairly close association with industrial accidents for twelve years prior to our present workmen's compensation act, the writer noted no such problem. In Germany, with the establishment of the first compensation act in 1885, the German physician was astonished at "the immense number of nervous workmen lacking in energy in whom the thought of compensation became a fixed idea."¹ With the establishment of the French accident law in 1898, A. Brissaud "expressed astonishment at the advent of a condition which he states was the unexpected effect of the compensation law and which he described as a new disease under the name of 'sinistrosis.' He calls this a 'psychical accident' caused by the fixed idea which has taken possession of the injured workman that every accident occurring in the course of work constitutes a damage admitting of indemnity. He claims that the preoccupation of the patient in still feeling he has pain becomes an obsession and is, in reality, a disease."² Sir John Collie, noting the effect of the English workmen's compensation act of 1906, stated, "Those who do much medico-legal work are constantly coming across cases of strong, healthy, able-bodied people who are absolutely well and fit for work and are not suffering from any pathological condition, have become self-centered and, having a lively appreciation of the supposed benefits of receiving money which they do not earn, have become victims of the operation of the workmen's compensation act and other acts conferring benefits in the event of illness or injury."³ To this Ellis adds that during the decade following 1910, when various compensation

acts were passed in the various states, the American surgeon's "first reaction was one of consternation at the vast increase in neurosis and malingering following the application of these statutes. It is a surprise to most of us that many workmen are willing to go for indefinite periods without going back to work except after strenuous efforts by the insurance carrier, the employer and the physician in charge to return them to remunerative employment."¹ In some of these cases there exists a real fear on the part of the injured employe that he has sustained a permanent injury which may later throw him out of employment, thus leaving himself and dependents helpless. In others there is the attitude to exact the last penny of compensation due them.

3. Out and out malingering is probably not common. The detection of fraud in these chronic low back cases is at times most difficult, and may tax the ingenuity of the examiner to the utmost. In many cases where fraud is suspected, it may be more properly the province of the insurance carrier or employer to detect it. It is obviously not the function of the doctor to trace these persons with a movie camera or observe their actions through a hole in the ceiling.

Lesser or milder degrees of malingering are probably quite common. In these the sore back lasts as long as it can be made to last or until better weather or working conditions arrive or the labor market improves. These patients can usually be returned to employment by straight talking.

Disability

Failure of the acutely traumatized lower back to recover as expected may be due to various causes:

1. The injuries may have been more serious than suspected, more than simple strains or sprains. Tears of the larger muscles and ligamentous structures require more fixation and a longer time to heal. Slight fractures into joints or injury to joint structures which permanently alter the function of the joint may cause more or less permanent disability.

2. There may have existed weaknesses and instabilities in the back at the time of the accident which, up to that time, were unsuspected and unfelt. Frequently treatment directed to these will hasten recovery from what was ac-

tually a trivial accident. Opinion may be divided as to the importance or unimportance of certain congenital anomalies and whether they represent sources of strength or weakness in the lower back.

3. There may have existed disease prior to the accident, or disease may have developed after and possibly as a result of the accident and injuries in question. Where tuberculosis, severe infection, malignancy, et cetera, are in question, early x-ray and subsequent interval x-ray examinations, careful general examinations and careful attention to the time element are most important. The so-called hypertrophic changes in the spine, when slight or moderate, should not be accorded undue importance. When these changes are marked, they undoubtedly of themselves are a cause of stiffness, pain and disability, and represent backs which are more easily injured and when injured are slow to recover.

4. There may have existed defects inherent in the make-up of the individual. In these it is especially important to recognize a neurotic background, and events and factors which have led to the prolonged disability. Many of these individuals have been started off on the wrong foot by an unsympathetic employer or doctor, in which the accident and resulting injury are unduly minimized and undertreated. Overemphasis of the seriousness of the injury and early overtreatment may be worse. An awareness on the part of these individuals of the presence of an otherwise relatively harmless fracture, existence of congenital anomalies and weakness or the presence of mild hypertrophic changes in the spine, may make further treatment most difficult.

Upon one's skill in correctly evaluating damage done to the low back structures by injury, and the parts played by other contributing factors in causing persistent disability, will depend one's ability to institute proper treatment, and, when called on, to reasonably estimate the extent and permanency of disability. Conclusions and opinions based upon subjective complaints of low back pain only, are of no more value in these cases than they are in others.

The careful consideration of each individual case and careful evaluation of objective findings should, in most cases, lead to a fair appreciation of the extent of existing disability. Divergency of estimates in a given case ranging from 10 per cent by one to 90 per cent or more by another,

before courts and compensation hearings, are humiliating enough to those concerned. To be asked to scale up or scale down from these positions in a compromise is worse still.

Treatment

From what has been said it is obvious that the treatment immediately following every low back injury is most important. Complete bed rest for one to three weeks, with the lower back in a suitable position for comfort, is the first requisite in most cases. To this, where necessary, may be added extension to the lower extremities and the local application heat and massage. Some form of fixation may be required for a shorter or longer period of time. Just as important as the period of rest immediately following low back injuries is the early return to gradually increasing use of the back. Some injuries may require a longer period of protection, and in some recovery is hastened by systematic physiotherapy over some weeks or months. Routine and daily habit-forming office treatments may be detrimental rather than helpful. Early return to some form of suitable employment, while the patient is still under medical supervision and such treatment as may be necessary, reassures the patient and makes for more rapid recovery. For this, the employer's cooperation, which is necessary, is too often not obtained.

Severe injuries and complicating conditions and diseases, of course, require appropriate treatment. Where responsibility for treatment of these cases is assumed, it should be carried out in a sympathetic and painstaking manner, and should not stop short of giving the patient the benefit of any form of treatment likely to

bring relief. In those cases in which a more radical form of treatment is indicated, such treatment should be offered the patient. From what has been said so far, it is obvious that the selection of cases for surgical treatment (fusion operations, fasciotomy, et cetera) must be made with the greatest care. While such surgical procedures in the average "non-compensation" case is generally satisfactory, similar procedures carried out on many of these individuals which make up the low back problem, end unsatisfactorily. It is therefore not at all surprising that insurance companies are loath to authorize some of these more radical surgical procedures.

Conclusion

In conclusion, the writer would especially emphasize the following points:

1. The importance of recognizing in every acutely traumatized back the possibility of the so-called low back problem and the confusion often attending the recognition and treatment of these injuries.
2. The importance of careful and thorough examination of each case.
3. The careful and painstaking correlation of all findings.
4. The sympathetic handling of these patients from the very beginning, neither minimizing nor exaggerating injury, neither over- nor under-treating them until they are returned to their former employment.

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THE ADEQUATE AND INADEQUATE TREATMENT OF INJURIES OF THE HEAD*

WINCHELL McK. CRAIG, M.D.

Rochester, Minnesota

INJURIES of the head constitute the most alarming and disabling result of the present day traffic accidents. Laceration of the scalp, fracture of the skull, bruising of the brain with laceration and hemorrhage, and the effect of

force transmitted to the noncompressible contents of the skull, all demand adequate treatment not only to insure the greatest degree of rehabilitation but also to guard against latent and subsequent disabilities.

It has been said that persons who have sustained extensive injuries of the head are never subsequently normal, and while it is true that

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massive destruction of the brain results in permanent disability, nevertheless, it is amazing at times to observe the gratifying response to rest and adequate treatment.

In any general consideration of injuries of the head it is assumed that the cerebral damage is more important than are demonstrable fracture of the skull, lacerations, bleeding from the ears and nose, and bloody spinal fluid, and that the latter are only evidences of the pathologic and physiologic changes which have taken place.

For a general classification of injuries of the head I rather like that of Cairns. This writer divided injuries of the head into those which prove fatal, those which produce mild symptoms and those in which the outcome is doubtful.

The injuries that prove fatal are associated with deep coma, stertorous breathing and an increase in the temperature and blood pressure. The injured patient does not respond to any type of treatment.

In cases in which the symptoms are mild, the symptoms consist of irritability, vomiting and headache. If unconsciousness is present it is of short duration. The patients usually respond to conservative treatment.

In cases in which the outcome is doubtful, unconsciousness persists; its depth varies and there are lucid intervals. Such symptoms are suggestive of cerebral laceration, middle meningeal hemorrhage, acute subdural hydroma or hematoma, or cerebral edema.

Of course, the foregoing classification cannot apply to all cases of injury of the head but it emphasizes the most important symptoms which need to be considered for suitable treatment. Adequate treatment must embrace a realization of the extent of the intracerebral damage, edema, hemorrhage, laceration of the meninges and brain, contusion, and thrombosis, and this can only be determined by careful observation of the patient and the reaction to treatment.

In order to compare adequate and inadequate treatment and consider some of the current questions concerning which there is a difference of opinion, I will review briefly some of the accepted methods of treatment as worked out on the emergency services of hospitals in large cities.

Donald Munro, of the Boston City Hospital, has found that one should treat surgical shock first before carrying out extensive examination

and then, when the patient has recovered, routine tests should be made. A modified program of dehydration, which is secured by the administration of magnesium sulphate by rectum and by mouth and by limitation of the fluid intake is put into effect. All patients are subjected to lumbar puncture and on his service 1,000 lumbar punctures have been performed without a death. If after a few days the patients do not show any improvement, or if there is evidence of localized pressure, he advises trephining for hemorrhage. Munro said that there is a 9 per cent difference in the results in cases in which the patients are treated with lumbar puncture and in those in which this method is not employed. He sounded a warning note about therapeutic dehydration, in conjunction with spinal drainage, in combating edema of the brain and called attention to unexpected and severe symptoms if this method is improperly used.

Kennedy and Wortis outlined their routine treatment for craniocerebral injuries at Bellevue Hospital. The treatment of shock also was emphasized to the exclusion of any detailed examination until relief occurs. One hundred to 150 c.c. of a 50 per cent solution of dextrose is administered intravenously to combat shock in the early stages. These authors employ lumbar puncture as a routine procedure and secure modified dehydration by administering a hypertonic solution of dextrose twice a day. Administration of caffeine sodio-benzoate, in doses of $7\frac{1}{2}$ grains (0.5 gm.), every four hours, has been found useful in stimulating the patient and retarding the production of cerebrospinal fluid. Rectal administration of fluids, as 90 to 120 c.c. of a 25 per cent solution of dextrose, is also used routinely.

In the Charity Hospital in New Orleans, the routine outlined by Ochsner consists of the treatment of shock by means of confinement of the patient in bed, the application of external heat, the oral administration of hot fluids, and intravenous administration of fluids (50 c.c. of a 50 per cent solution of dextrose). Complete general and neurologic examination is made as soon as shock is relieved; Ochsner notes especially the cranial nerves, pupillary reflexes, and the presence of any discharge from the ears or nose. Lumbar puncture is performed and the pressure of the cerebrospinal fluid is reduced 50 per cent. Roentgenograms of the head are made and

débridement and suture are performed if there is any laceration. Dehydration is secured by the administration of magnesium sulphate by mouth and rectum.

In Seattle, at the King County Hospital, Swift and Berens have developed a very elaborate outline for the house officers to follow. They emphasized the treatment of shock and advised that the foot of the bed be raised about 12 inches (30.4 cm.) and the patient be turned on his abdomen or side to prevent the aspiration of mucus. They advised the use of atropine and the intravenous administration of a 50 per cent solution of dextrose. Transfusion is given if the patient needs it. After the patient recovers from shock, a careful examination for evidence of brain damage is carried out; this includes a roentgenogram of the head, although the presence or absence of a fracture is not taken as an index of cerebral damage because roentgenologic evidence of fracture is present in only a small percentage of injuries of the head. Spinal punctures are done routinely and blood is found in 35 per cent of cases. The manometric pressure is always taken, and if it is elevated it is reduced 50 per cent. Spinal drainages are repeated daily until the spinal fluid is clear. The ingestion of fluids is limited and saline cathartics are administered by bowel and mouth to relieve the edema. The patients are kept in the hospital from two to five weeks, depending on their convalescence.

In all these methods of treatment, dehydration has been used in varied intensity. Fay has been an exponent of this method and has developed a technic which he asserted is followed by a marked lowering of the mortality and an almost complete abolition of posttraumatic sequelæ. Shock is treated with 50 c.c. of a 50 per cent solution of dextrose and 100 to 300 c.c. of physiologic saline solution is administered later. After the shock is over, lumbar puncture is carried out, and if the cerebrospinal fluid is clear, a fluid intake of 20 ounces (590 c.c.) is permitted daily and a dry solid diet is given. If the cerebrospinal fluid is bloody, then spinal drainage is performed daily and the fluid intake is increased to 30 ounces (885 c.c.) daily. As soon as the spinal fluid becomes clear, the preceding regimen is used. Daily administration of magnesium sulphate by mouth or rectum aids in dehydration. After twelve days in the hospital

the patients are allowed to leave, but the ingestion of fluids is restricted to 32 ounces (946 c.c.) daily for three months. According to Fay, this type of treatment lowers the mortality and 92 per cent of the patients are free from post-traumatic sequelæ.

In order to evaluate the different methods of treatment and to analyze their individual characteristics it is necessary to consider independently the different stages of the injury and the treatment outlined. The treatment of shock is of primary consideration in all cases and in all methods of treatment. However, there are two types of shock, the primary and the secondary.

While it is true that injury of the head usually produces the primary type of shock in which there is a relative lowering of blood volume as a result of vasodilation, the secondary type, which is caused by absolute lowering of blood volume as a result of hemorrhage, may be present.

It is agreed that no more than a superficial examination and the application of temporary bandages to control hemorrhage should be done until the patient has recovered from shock. The elevation of the foot of the bed and turning the patient on his side or abdomen during the treatment of shock is a valuable precaution against aspiration pneumonia. The intravenous administration of a hypertonic solution of dextrose or a blood transfusion, depending on the type of shock, and other supportive measures, such as the application of heat and the administration of caffeine, are the treatment of choice.

Lumbar puncture in the treatment of injuries of the head has been used for many years but has never been universally adopted. Some very eminent surgeons absolutely forbid the use of spinal drainage on their services; they say that it is a dangerous procedure, that the bloody cerebrospinal fluid does no harm, and that dehydration and surgical decompression should be used instead.

Bagley and others have demonstrated experimentally and clinically that blood in the cerebrospinal fluid may be followed by deleterious after effects and that it should be removed. Parker and Lehman have shown experimentally that the pressure of the cerebrospinal fluid varies directly with the amount of blood which escapes into the subarachnoid space. They further demonstrated microscopic evidence of inflammatory changes in

the brain, which were not the result of increased pressure, and concluded that the approach to the problem of increased intracranial pressure and meningeal irritation must include consideration of osmosis in bloody spinal fluid and the danger of deleterious effect on the meninges.

The great danger in performing indiscriminate and copious spinal drainage probably is attributable to poor judgment on the part of the surgeon. The danger of cerebral herniation in the presence of increased intracranial pressure is so well known that it needs no comment. The suggestion that manometric pressure be taken in all cases in which spinal punctures are performed and that the pressure be lowered 50 per cent seems to have solved the problem, according to Munro, Kennedy, Ochsner, and Swift and Berens. However, we all see cases in which spinal puncture seems superfluous and others in which the spinal drainage marks the turning point in the course of convalescence.

The use of lumbar puncture in the treatment of injuries of the head should be limited to those cases in which the patients do not respond to more conservative methods, and then the pressure should be decreased to half the original pressure. When bloody spinal fluid is present and there are no ill effects from the first drainage, daily punctures should be performed until the fluid becomes clear.

Of course, the repair of lacerated scalp, the débridement and suture in cases of compound fractures of the skull, and other necessary restorative procedures can be done after recovery from shock and as indicated. The dehydration therapy has been more or less satisfactory, although Fay's program seems a bit drastic in most cases. The administration of saline cathartics for edema of the brain is universally employed by neurologic surgeons, and limited intake of fluid is advantageous in some cases. However, the dangers of renal insufficiency and excessive deprivation of water must be kept in mind. Dehydration can be carried to a dangerous extreme and the patient should be observed carefully.

This brings up what is probably the most important factor in the treatment of injuries of the head, as well as in the postoperative care, namely, careful observation. The majority of outlined treatments tend to become didactic and

too comprehensive to be used in all cases without regard to individual features.

Carefully recorded observation of the pulse, temperature, respirations, blood pressure, fluid intake and output, daily changes in the results of general and neurologic examinations, daily changes in the blood count, and chemical composition of the blood, and progress, is the most important part of the treatment. An understanding of the physical and physiologic possibilities which may be causing the changes is next in importance and the application of certain therapeutic principles give patients suffering from injury of the head the type of adequate treatment required.

Morphine should never be used in the presence of an injury of the head, because of its depressive effect, but irritable, restless, and maniacal patients should be kept subdued. For this purpose, the barbiturates have been found invaluable. For immediate quieting of the patient, the intravenous administration of sodium ethyl methyl butyl thiobarbituric acid (pentothal sodium) or sodium amytal and the administration of pentobarbital sodium (nembutal) by mouth or rectum can be given as needed. At the clinic a patient who became maniacal as a result of an injury of the head was kept quiet for sixteen days with nasal feeding and the administration of repeated doses of sodium amytal through the nasal tube.

Patients should be kept in bed or on the inactive list for two to three weeks following an injury of the head, as the majority of patients who suffer from posttraumatic syndrome have been allowed out too soon. The development of headaches, emotional instability, exhaustion and epilepsy all emphasize the necessity for adequate treatment at the time of injury.

Posttraumatic headaches occur in a large number of cases of injury of the head and may be due to inadequate treatment. Fay reported a surprisingly small incidence of this sequelæ in cases in which dehydration and spinal drainage had been used. In reviewing some of the cases in which patients who were suffering from post-traumatic headache sought relief at the clinic, it was found that the patients had remained in bed only a short time, no spinal puncture had been performed, and little special treatment had been employed. This was found to be true in the

cases in which the patients complained of exhaustion and emotional instability after the injury. One man who had sustained a severe injury of the head had been taken to a hospital in an unconscious condition and had been allowed to leave the following day without any treatment. He had driven two days in his automobile across the country and when seen in consultation he was nervous, irritable, and cried easily. He was placed in the hospital. Sedatives were given, dehydration was employed, and a spinal puncture was performed. In three days he was like a new person. He was kept in bed two weeks and has had no trouble for four years.

Posttraumatic epilepsy or convulsion is one of the saddest and most distressing sequelæ of injuries of the head. It sometimes develops among patients who have dubious background or an inherent predisposition, but the injury of the brain may be an important contributing factor. To guard against these sequelæ it would seem that adequate treatment should be given to all patients who receive an injury of the head.

Recently, a series of encephalographic studies have been reviewed in an attempt to determine a definite relationship between cortical atrophy and posttraumatic symptoms. It would seem that any disturbance in the circulation of cerebrospinal fluid or the retention of blood in the ventricles or subarachnoid spaces possibly would cause cerebral atrophy or other lesions of the brain and meninges. In the thirty-eight of the last 306 cases in which routine encephalograms were made at the clinic, the patients said that injury of the head was the cause of their disability. In only eight of these cases was there evidence of cortical atrophy, and spinal puncture or other spinal treatment had not been employed in any of these cases. The periods of unconsciousness had lasted from half a minute to three days and the longer the unconsciousness had been the more severe were the post-traumatic symptoms. In four cases in which fractures of the skull were demonstrable there

was no cerebral atrophy; spinal drainage had been employed in these cases. Epilepsy had followed injury of the head in ten cases; cortical atrophy had occurred in three of these cases.

The entire study revealed no conclusive proof that inadequate treatment was the cause of post-traumatic syndrome and epilepsy but certainly suggested that it is only by carrying out adequate treatment in all cases of injury of the head that the occurrence of such sequelæ may be prevented.

Comment

Adequate treatment should be accorded all patients who receive injury of the head, not only for the purpose of rehabilitation but to safeguard them against posttraumatic sequelæ.

Adequate treatment depends not only on the extent of the injury to the scalp, skull, and meninges, but also on the extent of the injury of the underlying brain.

The treatment which has been developed in large emergency hospitals has been analyzed, and the treatment of shock, hemorrhage, and cerebral edema by dehydration, spinal drainage, and intravenous medication has been considered.

Posttraumatic sequelæ may develop as a result of inadequate treatment of injuries of the head. A small series of encephalograms disclosed cerebral atrophy.

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FRACTURE-DISLOCATION OF THE SHOULDER*

HENRY W. MEYERDING, M.D.

Rochester, Minnesota

THIS study demonstrates the value of immediate, accurate diagnosis and skillful selection and use of the method employed in the treatment of fracture-dislocation of the shoulder. The physician called on in emergency cases of this type has an opportunity to give service of priceless benefit to the patient. He must be prepared to judge the efficiency and safety of various open and of various closed methods of treatment, or of a combination of methods, and he must be able to carry out the chosen procedure without delay, not only in cases of fracture-dislocation but also in those cases complicated by injury to soft tissue. No one form of treatment is applicable following all types of injuries. Watchful waiting, if an injury demands immediate care, is to be condemned, as it leads to irreparable deformity, disability and economic loss. The patients who report for treatment late can be given only partial relief and will continue to have disability throughout their lives, while those who come for immediate diagnosis and treatment can, in the vast majority of cases, obtain excellent functional results (Case 1, Fig. 1 *a* and *b*).

A fall or blow on the abducted arm is the mechanical factor in the production of fracture-dislocation of the shoulder. I believe that modern speed and modern mechanical appliances are the cause of the increase in number of these severe, complicated injuries. Dislocation of the head of the humerus perhaps constitutes half of all dislocations encountered and is the most common dislocation in the body. Its frequency results from the instability of the shoulder joint. This instability is attributable to shallowness of the glenoid cavity, to the loose capsule and ligaments, to the exposed position of the joint which is so necessary for its wide range of movement, and to the elastic quality of its muscular support. When the arm is much abducted, weakness of the support at its inferior margin is demonstrated by tearing of the capsule and dislocation of

the head of the humerus. The subcoracoid or subglenoid dislocations are the most common; the humeral head that is in subglenoid position may, through muscular action or manipulation, pass forward to become subcoracoid in position. The force of the injury and the wide abduction cause the edge of the glenoid cavity or acromion to act as a fulcrum, thus to bring about shearing off of part or all of the greater tuberosity, or to produce fracture of the anatomic or surgical neck. Comminution of the head of the humerus, with displacement of the fragments and fracture of the edge of the glenoid cavity, acromion or coracoid process may be present. The circumflex nerve is most often temporarily paralyzed as a result of compression but any of the axillary structures may be damaged by the rough, jagged end of the humerus (Case 2; Fig. 2 *a* and *b*). Thus all the nerves, blood vessels, or tendons are liable, either at the time of the injury or later, through inexpert handling in transportation and manipulative attempts at reduction, to laceration and compression.

In emergency cases of this type it is always well for the physician to protect himself from possible litigation by carefully examining the patient for such injuries before accepting responsibility. The condition should be carefully discussed with the patient or his relatives and the exact situation made plain. It is also advisable to have consultation without delay in a good many instances.

The method of treatment of such injuries has been the subject of controversy for centuries. Sir Robert Jones, for example, in an article on "Certain fractures about the shoulder," in 1932, wrote, "Fifty years before the Christian era Pasicrates, in describing the injury, expressed his opinion that he preferred first to reduce the dislocation, and then allow union of the humerus. Aristion, on the contrary, endeavored so to arrange traction that it would act upon both the head and shaft simultaneously which, presumably, involved waiting for union before any attempt at reduction was made." Many of the early writers on the treatment of fractures were

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FRACTURE-DISLOCATION OF THE SHOULDER—MEYERDING

familiar with the mechanical factors involved and devised methods of treatment, consisting of manipulation, traction, use of levers and employment of fixation; these are in vogue at the present time. Modern aseptic surgery, the roentgenogram and the speed with which treatment can be made available are important factors in improving prognosis in cases of fracture-dislocations of the shoulder.

TABLE I. FRACTURE DISLOCATION OF THE SHOULDER 1924 TO MARCH 20, 1937 INCLUSIVE

Diagnosis	Cases	Per Cent
Fracture only	652	73
Dislocation only	193	21
Fracture dislocation	46	5
Total	891	100

Diagnosis	Total Number	Fracture Dislocations	
		Number	Per Cent
Fracture	698	46	7
Dislocation	239	46	19
Fracture, dislocation and fracture-dislocation	891	46	5

I have reviewed for this study 891 patients who had fracture, dislocation, or fracture-dislocation of the humerus. The number and percentage of patients who had each type of injury are given in Table I. Also, it is shown in Table I that 7 per cent of the patients who had fracture also had dislocation; that 19 per cent of those who had dislocation also had fracture; and that of the total of 891 patients, those who had fracture-dislocation represented 5 per cent.

The main interest of this paper, from now on, will be in fracture-dislocation involving the head of the humerus. As was to be expected, males were affected more often than females; the occurrence of fracture-dislocation was almost twice as frequent among males as among females (Table II). It is strange that although among males the left shoulder was affected twice as often as the right, among females almost the reverse was true. The average age of the patients was forty-five years, and eleven patients, or 24

per cent, were between forty and forty-nine years of age. Thirty-five patients, or 76 per cent, were thirty years of age or more; thus, this injury appears to be extremely rare in youth (Table III).

In view of the increase in the number of automobile accidents it is not surprising that fifteen, or a third, of the patients could recall only that "the car went into the ditch" or "we blew out a

TABLE II. SEX AND SITUATION

	Patients	Per Cent	Shoulder	
			Right	Left
Male	30	65	10	20
Female	16	35	10	6
Total	46	100	20	26
Per Cent			43	57

TABLE III. AGE AND SEX

Age—Years	Male	Female	Total	
			Number	Per Cent
10-19	3	0	3	7
20-29	7	1	8	17
30-39	4	1	5	11
40-49	6	5	11	24
50-59	4	3	7	15
60-69	4	3	7	15
70-79	2	3	5	11
Total	30	16	46	100

Average age, 45 years

tire and rolled over." Careful clinical examination as well as roentgenographic examination of all injured parts is advisable, for many of these patients sustain multiple injuries and come in to the hospital in a state of shock. The most common injury is a fall on the shoulder or outstretched arm (Table IV), and this may be a factor in explaining that twelve, or 26 per cent, of the patients who had fracture-dislocations were housewives. It is interesting to compare the number of housewives with the number of farmers and laborers (Table V). Loose rugs, slippery bathtubs, imperfect lighting of stairways, carrying objects in both hands, ice coated sidewalks, falls from ladders or roofs, are some of the causes given when taking the histories of

FRACTURE-DISLOCATION OF THE SHOULDER—MEYERDING

such patients. The patient in Case 3 (Fig. 3 *a* and *b*) was injured in an automobile accident.

In most instances the clinical picture varies markedly with the time which has elapsed following the accident. With a history of injury, deformity, muscular spasm, pain exaggerated by motion, crepitus and a flat instead of a rounded shoulder, which permits palpation of an empty glenoid cavity and a displaced humeral head, one

alone may be misleading, for fragments, such as sometimes are torn from the greater tuberosity, are missed or the exact situation of the humeral head or comminuted parts is impossible to ascertain. Fractures occur in the course of manipulation for simple dislocation and it must be obvious to the physician that roentgenograms taken before treatment are of medicolegal importance.

TABLE IV. TYPE OF ACCIDENT

Accident	Male	Female	Total	
			Num-ber	Per Cent
Fall	17	12	29	63
Automobile	11	4	15	33
Caught in belt	1	0	1	2
Kicked by cow	1	0	1	2
Total	30	16	46	100

TABLE V. OCCUPATION

Occupation	Male	Female	Total	
			Num-ber	Per Cent
Housewife	0	12	12	26
Laborer	9	0	9	20
Farmer	8	0	8	17
Clerk	4	1	5	11
Student	4	0	4	9
Merchant	3	0	3	7
Retired	1	1	2	4
Veterinary	1	0	1	2
Nun	0	1	1	2
Domestic	0	1	1	2
Total	30	16	46	100

could make a diagnosis easily and without the aid of roentgenograms. The importance of good anteroposterior and axillary or stereoscopic films, with expert interpretation, cannot be overemphasized. I believe that roentgenograms should be made of every injured shoulder. Too often delay in consultation permits swelling to obscure the findings and even the most skilled diagnostician cannot determine the exact type of fracture or dislocation. Anteroposterior roentgenograms

TABLE VI. TIME AFTER ACCIDENT WHEN PATIENT CAME FOR CONSULTATION

Interval	Male	Female	Total	
			Num-ber	Per Cent
Immediate (24 hours)	11	6	17	37
2-8 days	4	3	7	15
1-2 mos.	3	2	5	11
2-3 mos.	3	1	4	9
3-4 mos.	1	1	2	4
4-5 mos.	2	1	3	7
5-6 mos.	1	1	2	4
8-9 mos.	2	0	2	4
1-3 years	3	1	4	9
Total	30	16	46	100

As the time which elapses after injury increases, swelling subsides, fixation by adhesions maintains the displacement of the head and malunion occurs; then deformity, with limited motion and disability, persists. Permanent injury to the soft tissues also becomes more obvious. Treatment now presents an even more complicated problem and the prognosis becomes less satisfactory. Realizing the need of early recognition and treatment, the physician, when called on in emergency following fracture-dislocation, should use every means possible to determine the exact situation of the head of the humerus, the type of fracture and the extent of injury to soft tissue; moreover, he should begin treatment with as little delay as possible (Table VI).

The types of dislocation in this series are given Table VII. In cases of posterior dislocation the anteroposterior roentgenograms alone are difficult to interpret and the clinical and surgical findings may be found helpful in deter-

FRACTURE-DISLOCATION OF THE SHOULDER—MEYERDING

TABLE VII. FRACTURES ACCORDING TO TYPE OF DISLOCATION

Location of fracture	Subcoracoid	Subglenoid	Posterior	Displaced downward	Indeterminate	Total	
						Number	Per Cent
Surgical neck	7	6	3	1	0	17	37
Surgical neck and greater tuberosity	3	2	1	2	0	8	17
Greater tuberosity	9	3	1	0	2	15	33
Anatomical neck	0	1	0	1	1	3	7
Anatomical neck and greater tuberosity	1	1	0	0	0	2	4
Epiphyseal separation	1	0	0	0	0	1	2
Total	21	13	5	4	3	46	100
Per Cent	46	28	11	9	6		100

mining the exact condition. The humeral head was found resting on the edge of the glenoid cavity, as a downward subluxation, in some instances, or was displaced downward and outward with or without rotation. In a few instances comminution of the head, with dislocation of the fragments, made classification of the dislocation indeterminate. As the displaced, fractured anatomic head is without blood supply, reduction is not always of permanent benefit and aseptic necrosis causes prolonged disability. Excision, although not employed as a routine procedure, is preferable if the patients are elderly, for it gives an optimal functional result with minimal loss of time. Such fractures are not encountered among young patients and the epiphyseal dislocation can be reduced with good results (Case 9).

Fracture of the greater tuberosity was present in twenty-five of the forty-six cases, or in 54 per cent; in fifteen cases it appeared as the only fracture, but of seventeen cases of fracture of the surgical neck the tuberosity was found fractured in eight and of five cases of fracture of the anatomical neck the tuberosity was fractured in two. The types of fractures with relation to the dislocation are shown in Table VII.

Fracture of the tuberosity is the most frequent fracture in combination with fracture of the neck of the humerus; in combination with twenty-one subcoracoid dislocations it occurred thirteen times and in combination with thirteen subglenoid dislocations, six times. Such diagnoses cannot fail to impress one with the value of

roentgenograms properly made and expertly interpreted, for who could venture to make a diagnosis and administer treatment to the greatest benefit of the patient without knowing the type of fracture and the situation of the dislocated humeral head?

It is interesting to note that in 1906 Sir Robert Jones was able to produce radiograms representing twenty-two cases in which there was dislocation of the head of the humerus associated with fracture of the anatomic or surgical neck of the humerus. He stated, "This fracture dislocation was brought into prominence in an action brought against a distinguished surgeon about twenty-five years ago (1881) for malpractice. The learned judge refused to consider x-ray evidence on the grounds that it could not be understood by the jury. Tempora mutantur! Several most eminent surgeons appeared in the case but their experience of this complication was very limited."

Already I have laid emphasis on the importance of early treatment; it affects the surgeon's decision as to the form of treatment and as to the prognosis. The patients of the present series came for attention from an hour to three years after the accident. (Case 4; Fig. 4 *a* and *b*). The type of treatment in relation to the time after the accident when treatment was instituted at the clinic is given in Table VIII.

First to be considered in more detail are those patients who were treated on the same day as that on which the accident occurred. The one patient who underwent excision of the head of

FRACTURE-DISLOCATION OF THE SHOULDER—MEYERDING

TABLE VIII. TYPE OF TREATMENT IN RELATION TO TIME AFTER ACCIDENT

Treatment	Same day	2-8 days	2-9 months	1-3 years	Total	
					Number	Per Cent
Closed reduction	12	1	1	0	14	30.4
Open reduction	4	4	6	0	14	30.4
Excision head humerus	1	0	3	1	5	10.9
Arthrodesis	0	0	1	0	1	2.2
Physiotherapy	0	1	5	0	6	13.1
No treatment	0	1	1	2	4	8.7
Refused treatment	0	0	1	1	2	4.3
Total	17	7	18	4	46	100
Per Cent	37	15	39	9		100

the humerus was aged seventy-one years. Of the twelve treated by closed reduction eleven obtained good function; the one whose result was unsatisfactory had disseminated sclerosis and was in poor general physical condition. The results obtained by the four patients who were operated on were all good and the patients returned to their work. Thus it is evident that the excellent results occurred in those cases in which the patients were seen early and in which expert judgment was used in selection either of the closed or the open method of treatment. Those sixteen patients who were able to withstand the treatment advised had a minimal period of disability and maximal return of function; the results in over 90 per cent were very satisfactory (Case 5; Fig. 5 *a* and *b*).

Of the seven patients seen from two to eight days following injury, five had received treatment previously; this had consisted of manipulation, traction or application of splints. Three had not received treatment. One was treated by closed reduction, with good results; four were treated by open reduction with three good results and one poor result; one was treated by airplane splint and traction and obtained a good result in three and a half months. One was advised to return to the care of his home physician and to continue treatment (Case 6; Fig. 6 *a* and *b*, and Case 7; Fig. 7 *a* and *b*).

Eighteen patients consulted The Mayo Clinic from one to eight months after injury; eight had undergone manipulations; two, traction; one, manipulation and later open operation; one,

evacuation of a hematoma and ligation of a blood vessel. In six cases nothing more had been done than application of a sling. The problems confronting the surgeon in these cases present considerable difficulty. Of the six patients on whom we performed open reduction, four were greatly improved and obtained as good function as could be expected; the other two came to excision of the head of the humerus, with some permanent disability. Three patients underwent excision of the dislocated head with gratifying improvement. One of these three patients had a torn biceps muscle; one, mild Volkmann's ischemic contracture, osteoporosis and ulnar neuritis; and one, pulmonary and cardiac complications. One patient was treated by closed reduction seven weeks after the accident and this treatment was followed by physical therapy, with improvement. Arthrodesis was done in one case because of pain and disability and the patient is doing farm work now. Six were advised to continue only with physical therapy because of senility or complications. One patient, who had not received treatment previously, came for an opinion and was found to have epilepsy and fracture of the surgical neck with subglenoid dislocation; he refused treatment.

Four patients came after an interval of eighteen months to three years. One had a fracture-dislocation which had gone unrecognized for twenty-four months following injury; excision of a malunited, dislocated head was performed in this case, with some benefit. A laborer with a fracture-dislocation of three years' duration

had circumflex neuritis, syphilis, pain and disability, and refused treatment. Two aged and physically impaired patients consulted us respectively eighteen months and thirty months following injury and were advised not to have further treatment (Case 8; Fig. 8).

Assuming that the patient arrives as an emergency case and his general condition is satisfactory, general or local anesthesia provides relaxation of muscular spasm, permitting the use of steady traction of the flexed arm to pull the proximal end of the humerus away from the glenoid cavity. In some cases traction for a few minutes allows the head to slip through the rent in the capsule, reducing the dislocation and aligning the fracture in good position. Although traction in abduction is usually employed, at times hyperabduction is required, with manual manipulation of the head. The Kocher manipulation tends to produce laceration of soft tissues and fractures are displaced. In some cases, traction in moderate abduction and careful pressure of the foot in the axilla is a successful method of treatment. Care must be taken when any manipulative procedure is carried out so as not to cause injury to the axillary contents. Hemorrhage may be severe, and following axillary pressure incision and ligation of blood vessels or suture of nerves may be required. Because of periosteal and ligamentous attachments, the humeral head often may follow the shaft on traction after fractures of the surgical neck; this is not true after fractures of the anatomical neck.

The position of choice in fracture of the greater tuberosity is usually abduction and external rotation. In some of our cases the fragments remained in excellent position following reduction with the arm held to the side of the body. Roentgenograms should be taken following manipulation to ascertain the true state of the injury. An airplane splint, or recumbency with moderate traction by adhesive tape, provides adequate fixation. Open operation may be resorted to when the fragments cannot be reduced or when the insertion of the tendon of the supraspinatus and infraspinatus muscles tear loose with a small fragment of bone. It is impossible to determine rupture of the tendon of the infraspinatus because swelling and pain inhibit active motion; if an open operation is performed the

infraspinatus should be inspected, and, if it is ruptured, immediate repair is indicated.

At the risk of repetition, I should like to recapitulate. Of fourteen patients seen within twelve hours, twelve were treated by the closed method of treatment. Open reduction through an anterior incision usually is resorted to when other methods have failed or when complications are immediately apparent, indicating the immediate need of surgical intervention. Thus, of four patients seen within twenty-four hours of the time of injury, three had comminuted fractures; one fracture of the clavicle. Two of the four already had been subjected to manipulation by their home physicians. The results justified the surgical treatment carried out, as all of them obtained good function. The fracture-dislocations of the remaining ten patients on whom we performed open reduction had existed two and a half days to seven weeks; nine of the patients had failed to obtain relief through manipulation or traction and one had received no treatment. Excision of the humeral head was performed on five patients, three of whom had malunion; one was an epileptic and one an aged man. Arthrodesis was performed on a laborer, aged twenty-five years, whose dislocation had been reduced a month previously, with resulting deformity of a malunited, comminuted fracture of the head of the humerus, causing disability and pain. Two patients refused treatment, four were advised to accept the disabling deformities because of their age or complicating illness and six were given physical therapy.

Although we have not encountered recurring dislocation in this series, the operation of tenosuspension, as described by Henderson, would have been employed had the condition occurred.

It is generally agreed that the dislocation should be reduced first and then efforts made to obtain good union of the fracture. Having attained reduction, splints or traction are employed to maintain the most favorable position for several weeks. It is during this period of immobilization that muscular weakness, shortening, atrophy and impaired circulation occur, with adhesions and stiffness of joints. To avoid these effects every effort should be made to begin function early. The physician who has his patients contract their muscles and move their joints, and who provides light massage during this period of treatment, will avoid prolonged

disability of the shoulder. Following removal of the apparatus, active exercise to the full extent of function is urged and heavier massage used. Should adhesions appear to limit function of

ment disability in spite of expert care. The value of stereoscopic or anteroposterior and axillary roentgenograms in determining the exact situation of the humeral head and of the fracture can-

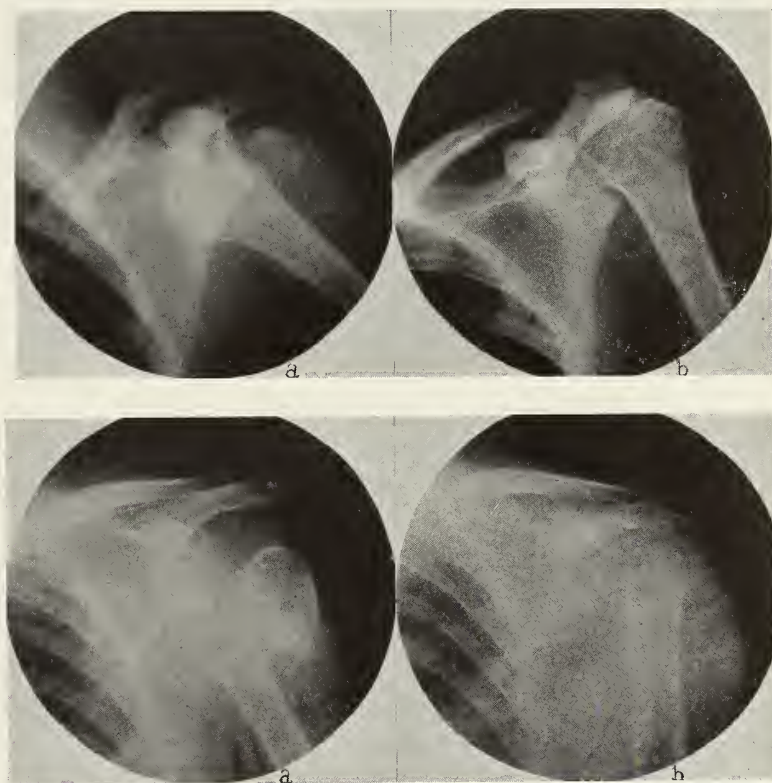


Fig. 1 (above). *a*, Anteroposterior roentgenogram showing a subcoracoid dislocation of the left humerus with fracture of the greater tuberosity; *b*, shoulder reduced and tuberosity replaced (Case 1).

Fig. 2 (below). *a*, Anteroposterior roentgenogram showing fracture of anatomical neck with outward and downward displacement and rotation of the head of the left humerus, with malunion; *b*, postoperative roentgenogram showing fractured head removed and humerus in glenoid cavity (Case 2).

joints, the physician assures himself of firm union of the fracture and may carefully manipulate the shoulder resorting to anesthesia if necessary. Physical therapy is a useful aid in improving function and lessening the period of disability; it should be given under the supervision of an attending physician.

Fracture-dislocation of the shoulder occurred in this series in about 5 per cent of all cases. The series included the following injuries to the humerus: fracture only, dislocation only and fracture-dislocation. Fracture-dislocation was twice as common among males as among females and was caused most commonly by falling on the outstretched arm or shoulder. The results were good when immediate diagnosis and treatment were instituted; delay in treatment, especially after several months, tended to result in perma-

not be overemphasized. Physicians should be prepared to perform accurate diagnosis and to select the method best suited for each patient. When the physician is in doubt, he would be wise to call a consultation, both for his own and for the patient's protection.

Reports of Cases

Case 1.—A youth, eighteen years of age, drove into a ditch and was thrown from his automobile, landing on his left shoulder. He was taken to hospital as an emergency case. A diagnosis of fracture-dislocation of the left shoulder was made and manipulation under anesthesia was carried out. The patient was kept recumbent, with abduction, external rotation and traction for five days, following which a splint was applied. Physical therapy was begun about the third week and by the fourth week he was able to use the arm and had fair function. The ultimate result was complete restoration of function (Fig. 1 *a* and *b*).

Case 2.—A male clerk, aged twenty-three years, who had had an attack of malarial fever one month previously, fell out of bed and struck his left shoulder. The patient had received no treatment and came several

splint applied and she was returned to her home. The patient was referred to the clinic because of deformity and continued pain of the right shoulder. Open reduction and insertion of beef bone screws were per-

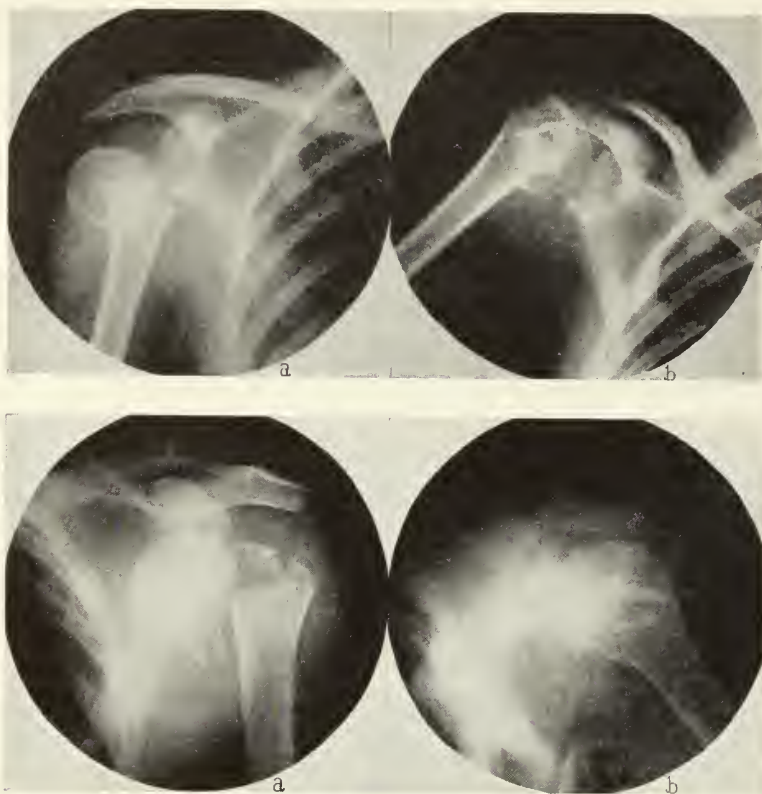


Fig. 3 (above). *a*, Anteroposterior roentgenogram of a fracture of surgical neck of humerus with downward dislocation, and *b*, postoperative roentgenogram showing reduction and fixation with beef bone screws (Case 3).

Fig. 4 (below). *a*, Anteroposterior roentgenogram showing subcoracoid dislocation of the head of the left humerus with comminuted oblique fracture through the neck and tuberosity, and *b*, roentgenogram showing postoperative reduction and fixation with three beef bone screws (Case 4).

thousand miles for consultation, because of the disability of the shoulder. Operation was advised and excision of the head of the humerus was performed; the biceps tendon, which was found completely torn, was sutured. A fracture of the greater tuberosity, evidence of which had not been discovered in the roentgenogram, also was found. The proximal end of the shaft was inserted into the glenoid cavity; the arm was put up in moderate abduction of about 40°.

This type of fracture-dislocation, after a month's interval, must be treated by open reduction; manipulation would be certain to do more harm to the soft tissues and would fail to reduce the fracture or dislocation (Fig. 2 *a* and *b*).

Case 3.—A female clerk, aged twenty years, was in an automobile accident five weeks previous to her admission at the clinic. She had been taken to a hospital where manipulation without anesthesia was performed, after which a splint was applied. Roentgenograms had not been made. Five days later she had been taken to a neighboring city and roentgenograms were made, a

formed. She was dismissed from the hospital on the ninth day following operation, after which she was instructed in physical therapy and returned to the care of her home physician. The patient was examined at the end of six weeks and at this time she had a very good result. She was advised to continue with physical therapy and has made a satisfactory recovery (Fig. 3 *a* and *b*).

Case 4.—A farmer, aged twenty-five years, reported at The Mayo Clinic five days following an automobile accident, at which time he had gone into a ditch following a blow-out. He had been unconscious and had been taken to a hospital, where he was treated for shock and a diagnosis of fracture-dislocation of the left shoulder was made, after which traction in abduction was applied. We performed open reduction and applied three beef bone screws to maintain fixation, after which a cast was applied. The patient left the hospital on the ninth day; physical therapy was given for two weeks, after which he returned to his home. Ten weeks after the operation he had an excellent result and began to do some farm work (Fig. 4 *a* and *b*).

X

Case 5.—A carpenter, aged forty-five years, fell from a ladder, a distance of 16 feet, to a roof, and then to a concrete pavement, landing on his left shoulder. He was brought to the hospital as an emergency case and

into the air, after which she landed on the right shoulder. She had been treated with a sling for two days; later roentgenograms had been made and she was told that there was a hair line fracture of the humerus. An

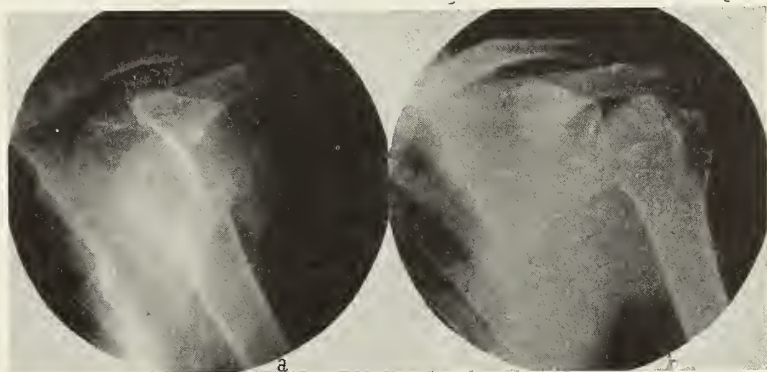


Fig. 5 (above). *a*, Anteroposterior roentgenogram showing subcoracoid dislocation of the left humerus and fracture of the greater tuberosity; *b*, dislocation reduced and fracture in anatomic position (Case 5).

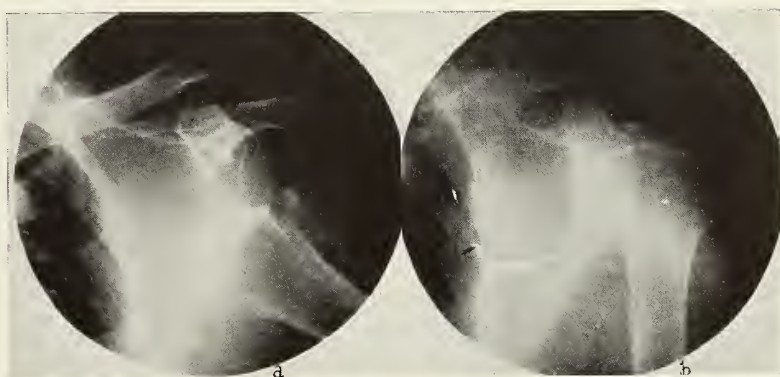


Fig. 6 (below). *a*, Anteroposterior roentgenogram showing subglenoid dislocation of the left humerus with fracture of the greater tuberosity; *b*, fracture-dislocation reduced (Case 6).

under general anesthesia the Kocher method of reduction failed; lateral traction and manipulation resulted in reduction and the fragments remained in position, as shown in the roentgenograms, with the arm dressed to the side of the body. He left the hospital the next day; four months later he was working and the result was excellent (Fig. 5 *a* and *b*).

X *Case 6.*—A man, aged fifty-five years, was brought to the hospital as an emergency case following a fall on his left shoulder. Fracture-dislocation of the left shoulder was diagnosed and this was reduced under general anesthesia by traction with the surgeon's foot in the axilla. The roentgenogram showed that the fractured fragment was apparently still attached and the patient was treated with a Velpau type of dressing. The postoperative roentgenogram showed the fracture reduced and good position of the fragment. The patient was able to use the arm in twenty days and the ultimate result was excellent (Fig. 6 *a* and *b*).

X *Case 7.*—A housewife, aged forty-eight years, was struck on the right side by an automobile and hurled

attempt had been made to use an airplane splint but this was unsuccessful because of pain. Further roentgenograms had given evidence of dislocation, and during manipulation under anesthesia the bone was heard to snap. At the time of examination at the clinic, twenty-nine days after the accident, the arm was extremely painful; the woman was unable to move it and open reduction was advised. An anterior incision was made. The humeral head lay in the subcoracoid position. Clots were evacuated from the glenoid cavity, after which the head was reduced. There were three distinct fragments. Three beef bone screws and chromic catgut were used to maintain the fragments in position. Convalescence was uneventful and the patient left the hospital on the sixth day; she returned home on the twelfth day to the care of her home physician. All fixation was removed at the end of six weeks and motion instituted. The patient reported an excellent result (Fig. 7 *a* and *b*).

✓ *Case 8.*—A man, aged forty-nine years, reported at The Mayo Clinic two years after he had been shot

three times in a battle with bank bandits and had fallen on his left shoulder. He had been taken to a hospital in critical condition, where he was treated for shock. Massage had been given and manipulation per-

diagnosis of "complete separation of the upper epiphysis of the left humerus with dislocation." Open reduction was performed and fixation to the side by adhesive tape resulted in good union and function.

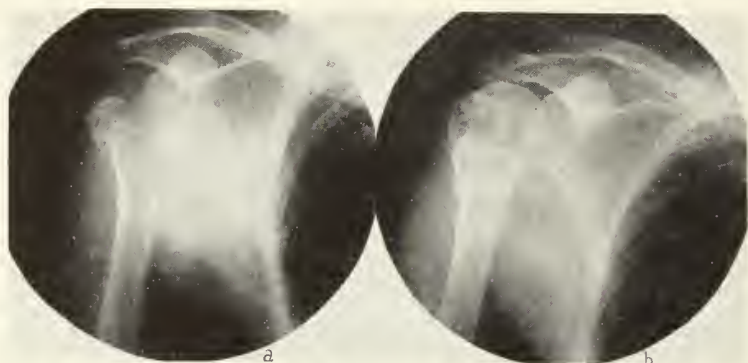


Fig. 7. a, Anteroposterior roentgenogram showing subcoracoid dislocation of head of right humerus with comminuted oblique fracture of the surgical neck and fragmentation of the greater tuberosity, four weeks following injury; b, postoperative roentgenogram (ten days) showing reduction of head and replacement of fractures, as well as fixation with three beef bone screws (Case 7).



Fig. 8. Anteroposterior roentgenogram showing subcoracoid dislocation of the left humerus with malunion two years after original injury (Case 8).

formed at the end of three weeks. At the time of our examination there was disability and weakness of the shoulder, with about 30° of abduction of the shoulder. A diagnosis of fracture-dislocation of the shoulder was made, and at the time of operation the malunioned, dislocated head of the humerus was excised; the arm could be abducted to 90° immediately and was put up in abduction and external rotation. The patient was kept recumbent and convalescence was uneventful. He left the hospital at the end of three weeks, physical therapy was carried out for one week after this and he was then dismissed to return home. He reported satisfactory improvement (Fig. 8).

✓ **Case 9.**—A boy, aged fourteen years, fell on the left shoulder while skiing and reported at The Mayo Clinic three days later because of pain and disability. He had consulted a physician, who had made a roentgenogram of the shoulder and who referred him with a

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HAND AND WRIST INJURIES*

WALLACE H. COLE, M.D.

Saint Paul, Minnesota

AS THE wrist and hand are subject to every imaginable type of injury it is, of course, impossible in a discussion such as I have been assigned, to touch upon even the smallest part of the subject except very superficially. The treatment of these injuries varies greatly, but there are certain underlying principles which apply to all of them and it is the importance of these principles which I wish to accentuate today rather than the details of therapy. We all have certain pet ways in which we treat any traumatic lesion and I am sure no one thinks his way is the only way, and yet it is not uncommon to see fundamental principles entirely forgotten or pushed aside in order that some special idea can be applied. There is only one basic reason behind all treatment of an injured part and that is to get that part back as near as possible to its functional normal and, we might add, to do this in the shortest possible time. This means the preservation of tissue where possible, anatomical reposition of injured bones or soft parts to the extent allowed by the lesion and the prevention of infection. Many times one sees the functional side neglected so that although a near-perfect anatomical result is obtained the disability must be rated high due to stiffened joints, adherent tendons and general tissue fibrosis. Even prolonged physiotherapy will rarely bring such cases back to the point where proper treatment would have had them long before. It is the purpose of this discussion to reemphasize the necessity of thinking along the lines of physiology and function if our patients are to get the best results from our handling of their cases. There is, of course, nothing new in this idea and for many years it has been the subject of repeated discussions, but from the viewpoint of one who sees a fair number of end-results from the hands of many surgeons it seems that it cannot be reiterated too often. A few of the more

common injuries to the wrist and hand will be used as examples for clarifying this principle.

Colles' Fracture

This lesion of the lower end of the radius (Colles' fracture), as you all know, is typically a fracture across the bone from one-half to one inch proximal to the joint line with the distal fragment displaced and tilted so that the joint surface faces backward instead of forward and with radial deviation and supination. There is also usually an impaction of the fragments due to the cancellous nature of the bone at the site of fracture. This picture is frequently complicated, however, by comminution of the fragments, variation in the type of displacement and fracture of the ulnar styloid. In looking over a series of radiographs of so-called Colles' fractures, we cannot help noticing that the condition is not an entity and that many variations occur and a mistake frequently made is to apply a single routine treatment instead of varying the management according to the pathology present. The requirements of treatment are: (1) reduction of the fracture; (2) retention of the reduction; and (3) the principle being emphasized in this paper, the active function of all parts not necessarily immobilized. It is readily seen that the manner of reduction and retention cannot always be the same and that the surgeon must know the methods suitable to himself and accommodate himself to the circumstances. Unless there is severe comminution and dislocation, reduction can usually be obtained by any one of the numerous methods used and position maintained by splints or plaster of Paris without placing the parts in any extreme or deformed position. With marked comminution wire traction and fixation in plaster may be needed or some special position for retention may be necessary. The fixation, of whatever type, must adhere to principles, the major one of which is that nothing in the apparatus must interfere with complete freedom of motion in the fingers and thumb. Plaster-of-Paris lends itself perfectly to this purpose and the unpadded plaster should

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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 1. Lateral view of forearm and wrist held in posterior non-padded plaster splint showing how flexion of fingers is allowed for the full range of motion. The plaster splint is held in position by a few turns of plaster-of-Paris bandage.

Fig. 2. Forearm and wrist held in posterior plaster splint held in place by a few turns of plaster-of-Paris bandage. Note that palmar piece does not extend beyond mid-palmar crease.

Fig. 3. Same as Figure 2 showing range of motion in thumb allowed in this type of dressing.

Fig. 4. Colles' fracture dressed with antero-posterior splints. Final bandage has not been applied. Note that posterior splint extends to the heads of the metacarpal bone and that full flexion of the fingers is possible.

Fig. 5. Same dressing as shown in Figure 4 from palmar side. Note that palmar splint does not extend beyond mid-palmar crease.

be used except in the simple uncomplicated fracture where antero-posterior splints are satisfactory, especially if marked swelling is already present. The fact is often overlooked that the mid-palmar crease must be uncovered if full flexion of the metacarpo-phalangeal joints is to be obtained and the palmar part of the fixative dressing for Colles' fracture must never extend beyond this line, as otherwise the post-reduction treatment cannot be properly carried out. The dorsal splinting must extend to the distal ends of the metacarpal bones, however (Figs. 1-5).

Immediately after the fixative dressing has been applied, the after-treatment must start, and this consists of active motion of the fingers through their entire range, including abduction and adduction, with passive assistance if necessary at first. Motion of the elbow must also be started and elevation of the shoulder insisted upon on the first day. In this way only can a long drawn out convalescence due to stiffness in the joints, atrophy of muscles and sluggishness of circulation be prevented. The classical stiffness of the shoulder joint following a wrist fracture would never be seen if the normal parts were kept functioning through the healing period. With this treatment also all necessity

for prolonged physiotherapy after removal of the fixative dressing is eliminated and it is probable that healing of the fracture may even be accelerated by the maintenance of normal circulation.

In the average case fixation is necessary for a minimum of three weeks with almost double this time being necessary in the complicated varieties. I believe many excellent reductions have been spoiled by the early removal of dressing advocated by some surgeons. Where the wrist has been placed in a deformed position, such as extreme flexion, in order to retain reduction of fragments, the dressing must be removed as soon as agglutination has taken place and a second dressing applied with the wrist in a functional position, that is, either straight or slightly cocked-up if the least possible permanent disability is to be obtained.

Fracture of the Navicular Bone

The two outstanding mistakes with fracture of the navicular bone are failure of diagnosis and too short a period of fixation when under treatment. Fractures across the body of this bone are true intra-articular fractures analogous to those of the neck of the femur and as such

must be treated with the greatest care and patience. The circulation of the proximal portion depends on small nutrient arteries alone as there is no muscular attachment or periosteum to reinforce this source of nourishment. Consequently if the fragments are moved even the slightest on each other before union has occurred the delicate new blood vessels connecting the fragments will be torn and non-union result. Six to eight weeks is a minimum time for absolute fixation and if union as demonstrated by the radiograph is not firm, even a much longer time is necessary. Those cases which heal without fixation of six weeks or more are probably those where the fracture line is through the distal part of the bone so that the proximal fragment still has a direct blood supply.

The fixation in fractures of the navicular bone should be the same type of unpadded plaster as used for Colles' fracture described above with the hand in slight ulnar deviation and moderately cocked-up. Active use of the fingers and thumb, of the elbow, and of the shoulder should start immediately as with Colles' fracture.

Ununited navicular bones lend themselves to conservative operative treatment if the distal fragment is alive. This consists usually of drilling of the fragments with or without the insertion of a bone graft. Apparently drilling alone is all that is necessary in most cases but the grafting adds so little to the operation that I believe it should be used where possible. If both fragments are definitely avascular it is doubtful if either procedure will avail, however. Operative removal of one or both fragments always leaves the wrist with a definite disability due to pain and limitation of motion. Following a drilling or bone grafting the wrist should be immobilized as soon as possible in the usual non-padded plaster and held until union is seen to be taking place as evidenced in the radiograph.

^ Fresh fractures of the lunate or other carpal bones should be treated in the same way as navicular fractures although a shorter period of fixation is usually feasible.

Dislocation of the Lunate Bone

Dislocation of the lunate bone, a not uncommon injury, should be treated conservatively if possible and operation used as the last resort. Steady but strong traction on the hand for ten to fifteen minutes will reduce most cases al-

though gentle manipulation may be needed in addition in others. In older dislocations open reduction may be tried or the bone removed, the latter especially if the median nerve shows signs of being injured. The manipulative treatment should always be gentle, as permanent damage to the median nerve may otherwise result. Some wrists from which the lunate bone has been removed have almost normal function, but this is not always the case and this operation should never be used in fresh cases unless the other methods have failed. If the bone has been replaced, three weeks fixation in plaster is all that is needed unless, as not infrequently happens, the navicular is broken, when, of course, the longer period of time needed for this fracture must be used.

Fractures of the Metacarpals and Phalanges

Fractures of the metacarpals and phalanges, which seem somewhat trivial in themselves, may lead to marked disability of the hand if the principles outlined earlier are not constantly kept in mind. The special mechanical factors involved in these lesions must also be known by the surgeon and the dressings applied accordingly. Metacarpal shaft fractures always tend to buckle posteriorly due to the pull of the interosseus muscles and this tendency can only be counteracted by direct pressure of the dressing on the back of the hand over the point of fracture. Here again the non-padded plaster dressing is ideal if properly depressed over the angulation and a curved finger splint attached to it, for then the other fingers and the thumb can be free for normal function. I feel it is a mistake to treat a fracture of a metacarpal with splinting over a roller bandage as is sometimes done, for this dressing violates our principle of keeping all uninvolved parts functioning and frequently does not hold the fracture from angulating again. Posterior support is absolutely necessary and quick convalescence can only come, and here I repeat myself, when active motion of the uninvolved parts is started immediately and kept up through the entire time healing is taking place. Certain fractures of the first metacarpal bone can only be held by direct traction on the thumb by a wire through the tip or through the nail. This traction must be attached to a banjo type of support or to a stiff wire hook extend-

ing out from the usual wrist plaster with the base of the thumb included in the plaster. The fingers must be left absolutely free for normal function.

Lacerations and Contusions of the Hand and Wrist

In lacerations and contusions of the hand and wrist the immediate problem is to prevent infection from developing in the wound. Without going into details, there are certain general principles which can be reviewed and which if followed will greatly reduce the disability so frequently seen after such accidents. The immediate cleansing of the wound must be done thoroughly and carefully by excision of all dead or crushed tissues and the removal of all gross dirt. Lacerated and bruised skin edges must be cut away and great care used not to carry infection into new areas by careless handling of the tissues. Antiseptics can be used at any time during this procedure but must not in any way interfere with or take the place of mechanical removal of injured tissues and the dirt surrounding them. Unless the wound is a clean cut incision no attempt should be made as a rule to suture tendons or other deeper structures except divided nerves. These latter should be approximated by fine silk or other material and the skin closed over the wound by interrupted sutures. In order to close these wounds and cover up exposed tendons and nerves it is sometimes necessary to relieve tension by lateral in-

cisions in sound tissue or some similar or more elaborate plastic procedure. Fractures should be set and dressed after the wounds have been closed and if possible all sutured wounds should be left exposed so as to prevent maceration. Secondary tendon repair can be done later if infection does not set in or after it has been eliminated, for many hands have been crippled permanently by attempted tendon suture in an infected field.

If tendons are sutured in a clean incised wound great care must be taken not to injure any of the tissues further and the sutures must be placed carefully and properly to insure the minimum of scar tissues afterwards. A hurried job will be a poor job. All bleeding must be controlled and buried catgut must be eliminated as much as possible. It is surprising how often skin sutures alone will be sufficient to close the wounds. Motion in these cases and also, of course, in those with secondary tendon repair, must be started early and this can be done if silk is used for the tendon suture. In this way adhesions are prevented, function will return earlier, and atrophy kept to a minimum.

In closing I wish to repeat once more the gist of this brief discussion and that is, that all injuries of the hand and wrist must be treated with the ultimate function of the parts in mind and that unless the active function of uninjured or slightly injured tissues is maintained during treatment and convalescence, results will be far from what they could and should be.

INJURIES OF THE THIGH*

B. S. ADAMS, M.D.

Hibbing, Minnesota

INJURIES of the thigh vary from superficial abrasions of the skin to crushing injuries so severe that amputation of the leg is required. They may be so trivial as to cause no disability or loss of time, or they may cause shock that results in death. Industrial accidents that involve the thigh are usually of a rather severe type, causing protracted disability, are often followed by more or less permanent partial disability, and

not infrequently cause death either immediately or in a short time. Furthermore, thigh injuries are very frequently associated with injuries involving other parts of the body—far more so than are injuries to the arm or lower leg. Because of this and because every thigh injury must be regarded as associated with a fracture of the femur until examination proves otherwise, careful first aid treatment is most important. Dressing and splinting the injured leg where the patient lies, adding traction if fractured, covering

*Read before the Northwest Industrial Conference in connection with the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 5, 1937.

with blankets to prevent chilling, and lifting carefully onto a stretcher is the basic principal in first aid and is of utmost importance in thigh injuries. On the day this was written a Minneapolis newspaper showed a photograph of two police officers helping a man with a broken leg walk to an ambulance right after an accident on a street in Minneapolis, a sad commentary on first aid treatment by the police department. In many accident cases, and especially in thigh injuries, first aid is the most important treatment the patient is to receive, and very often how well and how promptly this is carried out determines what the final result will be. Too much stress cannot be given to careful, gentle, intelligent first aid, from the time the patient is hurt until he is in bed in the hospital.

On arrival at the hospital first observe his general condition; look particularly for bleeding or evidence of loss of blood. Shock is present in many of these cases and may be very severe. Shock may be present with comparatively slight injury. On the other hand it may be slight in very severe injuries. But more or less shock commonly accompanies thigh injuries. The first effort must be to warm the patient thoroughly and to keep him warm. Give morphine hypodermically; stop bleeding if any is apparent; look for internal bleeding. If fracture is found, apply adequate traction as soon as possible; it helps to relieve shock. But above all else keep the patient warm. Saline, glucose, and blood transfusions may be needed. If his general condition allows, there should be careful examination, with particular attention to the amount of swelling in the thigh, to the severity of cuts and lacerations, if present, and whether or not fracture is apparent. Observe carefully the condition of the leg below the site of injury, both as to its color, temperature, and circulation, as well as any evidence of injury to nerves. Not only is the femur the largest and longest bone in the body but it is surrounded by the thickest and longest muscles, and these are enclosed in a tough, dense, unyielding cylinder, the fascia lata, which is strongest and thickest in the upper thigh but continues down to and below the knee. With any injury to the bone, there is bound to be swelling in the contused and bruised muscles. This swelling may become very large, but because the fascia lata is tough and unyielding there is but little space for expansion and the pressure within increases. If to this is added a considerable hemor-

rhage from torn blood vessels, or from bleeding in the muscles themselves, the pressure may be so great as to interfere with the circulation of the main arteries and veins of the leg. This interference may be so serious that the leg below the swelling will become cold, cyanotic, and pulseless. If this condition continues long, gangrene will follow. Should the leg or foot remain cold, dusky, cyanotic, with evident cessation of circulation due apparently to pressure from swelling in the thigh, the skin and fascia lata over the swollen area must be incised by long longitudinal cuts in the hope of preventing the need for amputation. This must be done under the strictest surgical technic to avoid infection. To be effective these incisions must be made early before serious damage has occurred. These patients are often in more or less shock, usually have additional injuries and are generally in a bad way so the physician hesitates to add further insult to an already badly injured patient. But when required and done sufficiently early the results are often so satisfactory that it is worth the additional risk. To be effective it must be done as soon as the signs of circulatory failure are definite and no evidence of improvement appears. With this, elevation of the leg, heat to both leg and the entire body, intravenous glucose in saline, or blood, or both, are essential. Fortunately such a serious swelling does not often occur. In most cases elevation and heat, with extension of the leg if fractured, will be sufficient, and within a few days the swelling begins to subside.

Bruises and Contusions.—Among the more common lesser injuries are bruises and contusions of the thigh. Hot packs and gentle massage will give the best relief and in a few days light exercise should be added. In the more severe cases a hematoma may form under the skin or in the muscle layers of sufficient size to cause pain and a good deal of swelling. Aspiration under aseptic care may relieve the condition if the blood be fluid; or an incision may be needed to relieve the pressure and evacuate the clots. This must be done under careful technic to avoid infection and should be followed by a snug, but not too tight, bandage to close the cavity and prevent further bleeding.

Hemorrhage.—Rupture of varicose veins is not uncommon. Pressure directly over the bleeding veins will usually stop the hemorrhage. If

not, incision and ligation of each end after resecting the part dilated may be needed. But if any of the deep arteries and veins are severed the internal hemorrhage will usually be severe and serious, and incision under strict technic with ligation will be required. In open cuts, a dressing and tight bandaging or a tourniquet in case of serious bleeding will give the best temporary aid until hospital care can be obtained. In an emergency, packing a cut that is bleeding profusely may be required to save life. However, a sterile dressing and a snug bandage, aided if necessary by a tourniquet, is much to be preferred. Packing always invites infection and should not be used if other measures are effective. As soon as possible the bleeding vessels must be tied and the wound closed under careful surgical technic.

Sprains, Rupture of Muscles and Ligaments.—Sprains, torn muscles, and torn ligaments occur especially around and just above the knee. If not too severe, the best treatment is heat and light exercise. In very severe sprains rest for a time with heat and gentle massage are advisable. In badly torn muscles, rest and even suturing may be necessary. But in cases not too severe there will be less disability, fewer adhesions, a much shorter period of disability and fewer after-effects if light exercise is started early, usually within a few days. Grossheim in an analysis of five hundred cases of torn muscles found the following in order of frequency: First, tears of spinal muscles; second, muscles of the calf; third, quadriceps muscles; fourth, adductors of the thigh (riders thigh); fifth, biceps of the arm. Wharton, an English surgeon, found that forced mobilization and active motion gives better results than immobilization, and is followed by less organized clot and fewer adhesions. Gilcreest* says early surgical repair in extensive or complete tears saves time and gives a much better ultimate result.

Knee Joint Effusion.—Effusion into the knee joint is often seen in connection with thigh injuries. The knee becomes swollen, painful, fluctuating, and the patella is floating. Pressure on one side of the patella can be felt transmitted to the opposite side. This swelling may be from blood or an excess of serous fluid in the knee

joint cavity and may be present either with or without fracture. If the aspirated fluid shows fat globules it indicates injury to bone or cartilage. X-rays should be taken to ascertain if fracture is present. Treatment calls for aspiration whether fracture is present or not. If no fracture exists and no structural injury has occurred, repeated aspiration, snug bandaging of the knee and swollen area, and ice, will give the quickest relief. Forrester suggests using a rubber sponge over the knee joint for pressure, slit so as to avoid pressure over the patella, but exerting pressure around the patella, with a cotton pad in the popliteal space and a gauze or elastic bandage. Walking without cane or crutches from the outset is urged. This will often help to prevent the reaccumulation of fluid. In addition to this, repeated aspiration may be needed. Several weeks' treatment will usually clear up these cases.

Fracture of the Femur.—The old principle of treating fracture of the femur by extension is just as important today as it was when Buck immortalized his name by applying extension with tape glued to the skin. Buck's extension is still largely used and in many fractures is all that is required. But certain refinements give more stability and steadier and better apposition of the bone ends. First of all should be mentioned flexion of the thigh on the body, and flexion of the leg at the knee to relax the powerful contracting muscles as much as possible. Physiological rest does much to prevent muscle pull which causes displacement and is hard to overcome. Next I believe should be mentioned the Kirschner wire. This is the most important improvement in fracture work that has been developed in recent years. Skeletal traction finds its most useful field in femur fractures. Skeletal traction with Kirschner wire allows all the traction needed to overcome shortening. So effective is it that one must take care to avoid overlengthening. If there is lateral displacement that is hard to control, an additional Kirschner wire inserted near each end of the fractured bone will often enable the surgeon to bring the ends into good apposition, and by incorporating the ends of the wire in a plaster cast, to hold them in position. I believe open operation should be avoided if alignment and apposition of bone ends can be obtained by any other means. It may tax the skill and perseverance of the surgeon to the

*Gilcreest, E. L.: Ruptures and tears of muscles and tendons of the lower extremity. Jour. Am. Med. Assn., 100:155, (Jan. 31) 1933.

utmost to obtain and retain good alignment and apposition of the bone fragments, but in most cases it can be done. When accomplished the results are so satisfactory, the healing period so shortened, to say nothing of the diminished risk, that it seems the acceptable method. Open operation always delays healing, requires not only surgical technic that is absolutely perfect, but trained teamwork on the part of the entire operating room crew. One slip may mean disaster to the patient.

The technic of inserting a Kirschner wire is not difficult. With a Kirschner drill of either power or hand type the wire goes through the densest bone with amazing ease and speed. In fact, it is inserted through the bone so fast that one must watch very carefully in drilling that the drill is being inserted at right angles to the shaft. No anesthetic is needed except novocaine in the skin at points of entrance and exit of the wire. The yoke is easily applied to the wire and the holding nuts should be screwed tight to the wire or it will slide and cause the wire to bend when weight is applied. Twenty to forty pounds weight can then be applied at once with the thigh flexed at an angle of about 45 degrees. The location where the wire is inserted will depend to some extent on the site of fracture. For fractures in the mid or lower part of the femur a wire inserted in the upper end of the tibia just below the knee joint capsule allows knee motion and gives good results. A satisfactory point for inserting the wire is just distal to and one half inch posterior to the tubercle of tibia. For fractures higher up on the femur the wire had better be inserted in the lower end of femur but high enough to avoid the knee joint capsule which extends two and a half to three inches above the patella on the inner side of the thigh. After the shortening has been overcome there may be difficulty in holding the bone ends in close apposition. Two pressure pads fastened to the rods of a Jones splint, one above and one below the fracture pushing in opposite directions will be effective in some cases; or more effective may be slings above and below the fracture attached by cords to weight and counterweight. In stubborn cases a more effective method is to insert an additional Kirschner wire through each fragment of the fractured bone a short distance from the

fracture, manipulate the ends together and hold them while a circular plaster cast is applied incorporating the ends of the wires in the cast, extension being maintained during the procedure and continued until the cast is strong enough to hold. The fluoroscope must be used during this procedure to make sure the ends are in apposition and the alignment satisfactory. Extension in an adult will be required eight to ten weeks, though four to six weeks will suffice in young individuals. In many cases after three or four weeks an x-ray will show some bone union around the fracture and if the wire is causing irritation to the skin it should be pulled out and skin traction applied until union is strong. During this period knee motion should be active daily as well as motion at the ankle and hip if possible. Fractures in the upper hip and especially intertrochanteric fractures do better and usually require abduction and flexion as well as extension to overcome displacement caused by the abductors of the thigh. Usually after six to eight weeks if the x-ray film shows sufficient callus, the traction may be removed. One of two procedures may then be followed. Either allow the patient to lie in bed giving massage, allowing active motion and using heat to aid joint action until the union is strong enough to allow the use of crutches, or a cast may be applied from the toes to the waist and the patient allowed up on crutches at once. Ten or twelve weeks after a fracture most adults can start weight bearing. In children up to seven or eight years of age, the simplest and in most cases the most satisfactory treatment for a fractured femur, is Buck's extension with the leg held vertical and the cord running up to a pulley in the ceiling above the bed and enough weight to pull the buttock of the fractured thigh clear of the bed. It is remarkable how comfortable these little patients are in this arrangement. The results are very satisfactory. Older children are made very comfortable with Kirschner wire and one should not hesitate to use it. Care should be taken to avoid the epiphysis.

In summary, every injury should receive intelligent first aid, attention should be given to shock and shock prevention, a careful and thorough examination made, and appropriate competent treatment given to the injuries found.

ANAL FISSURE*

W. A. FANSLER, M.D.

Minneapolis, Minnesota

I PRESUME to call your attention to a condition so "shop worn" as anal fissure, because I have certain ideas as to why a lesion seemingly so insignificant, so often refuses to heal permanently under medical care. In considering this, it is necessary to differentiate between superficial cracks, single or multiple, which occur about the anus, and true fissure or anal ulcer. Multiple superficial skin cracks usually occur following some irritating secretion from the rectum, diarrhea or external irritation. Upon examination the skin about the anal margin is found to be somewhat reddened and inflamed, and there will be several shallow cracks radiating from the anus. If the condition does not clear up or tends to be recurrent, one or more cracks may deepen to the point of being a true fissure. A single superficial crack may also occur following the traumatization of a hard stool, poorly given enemas or rough instrumentation, but this lesion will usually heal by keeping the stool soft and using a local application of some mild ointment or dusting powder.

A true anal fissure is usually single, and most frequently located posteriorly. Occasionally there may be two, and in this case their location is usually anteriorly and posteriorly. Fissures located elsewhere on the circumference of the anal canal are relatively infrequent. That most fissures are located posteriorly is perhaps due to the fact that there is usually a deeper crypt of Morgagni in this location, and this portion of the anal canal contains few muscle fibers and more fibrous tissue, and hence is less elastic. The direction of the anal canal and the position of the rectum in the hollow of the sacrum also cause a greater strain in this area in the passage of a constipated stool. There are two usual causes for anal fissure. The first is its development from a superficial crack, which may be of the inflammatory type already mentioned, or one caused by direct trauma. Cracks caused by trauma are usually due to the passage

of a hard stool so large that the mucosa lining the anal canal cannot be stretched sufficiently without cracking, to permit the passage of the fecal mass. This injury is often made easier by the fact that in some persons a congenitally small anal canal is present and the lining mucosa is unusually thin. Occasionally there may also be some sharp particle in the stool which will project from it just enough to cut or scratch the tense mucous membrane. If at this stage of development the bowels are kept soft with mineral oil, so that no further injury occurs, the lesion will usually heal promptly. If, however, further traumatization takes place, this injury plus some degree of infection which is present, causes the base of the crack to become indurated. Recurrent injury will then further deepen the crack by splitting the inflamed friable tissue at its base. If this process is repeated the crack is soon deep enough to expose the fascial sheath surrounding the external sphincter muscle. When the fascia is exposed we may be said to have a true fissure (Fig. 1). The margins of the mucosa on either side of the lesion now retract, and medical treatment is usually inadequate. The only way a fissure can heal is for the mucosa to bridge over the base of the ulcer. To do this the epithelium must adhere to the tissues lying immediately underneath, and, since this base is composed of fascia which is an avascular tissue, firm adherence is almost impossible. If the gap is bridged over, the layer of cells is so thin and the attachment to the fascia so fragile, that the slightest stretching or injury breaks it down. Bridging is rendered more difficult and breaking down more easy from the fact that the fissure margins are not attached to the fascia underneath, but slide on it with each expansion and contracture of the anal canal. The reason that the application of silver nitrate stick is occasionally successful in curing a lesion, is that the cauterization produces a severe enough reaction to secure fixation of the fissure margins to the fascia and to produce enough granulations on the fascial surface to permit firm adherence of the new epithelial cells. While this is occasion-

*Read before the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 4, 1937.

ally the result, more often this method is unsuccessful, and it is always more painful than operation.

The second cause of fissure is the infection in a crypt of Morgagni. When an infection oc-

into the substance of this inflammatory tab. Then even though the fissure heals down to this pocket, here infection remains and produces a recurrence of symptoms.

A fissure which has a submucous fistula above

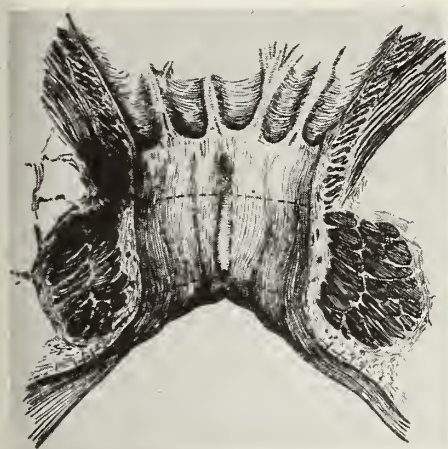


Fig. 1

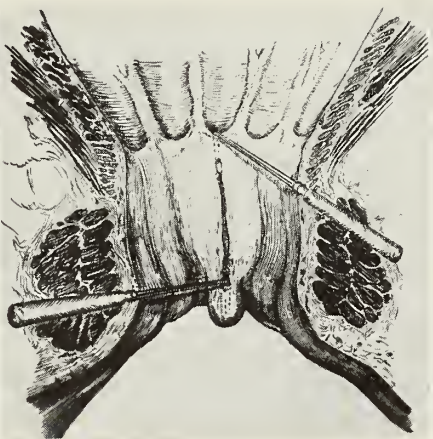


Fig. 2

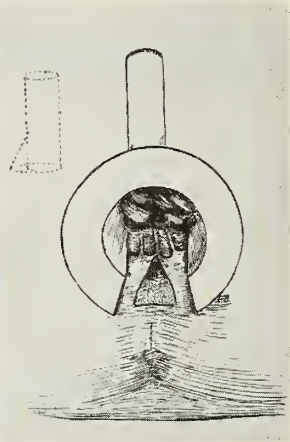


Fig. 3

curs in one of the crypts, aside from the resolution of the infection which no doubt often occurs, there are two other alternatives. One is that the infection extends through the bowel wall, producing a perirectal abscess. The second is that the infection may extend downwards superficially underneath the mucosa of the anal canal. This, of course, causes the mucosa to become friable, and slight traumatization will produce a break-down of the fascial layer. This break usually does not extend upwards as far as the infected crypt, but ends in the upper portion of the anal canal $\frac{1}{4}$ to $\frac{3}{8}$ of an inch short of the source of the infection. From this point will be found a small sinus underneath the mucosa which connects the upper end of the fissure with the crypt—in other words, a tiny submucous fistula (Fig. 2). The same difficulties to healing exist here as in the previous case, and in addition, if one were fortunate enough to heal the fissured area, the sinus would remain and infection recur in the same manner as before. If the fissure is untreated, a so-called sentinel pile forms at its lower end. Irritating secretions from the fissure produce an inflammatory hypertrophied tab, which in part may also be due to some sagging of the anal mucosa about the fissure. In almost every case a small blind pocket will be found extending downward (as illustrated) from the distal end of the fissure

or a sentinel pile below, cannot possibly be cured by medical means alone. In cases, however, where no sentinel pile exists or there is no sinus at the upper end of the fissure, treatment other than operation may occasionally produce healing. Unfortunately for medical treatment, many cases of fissure are complicated by other rectal pathology, such as hemorrhoids, hypertrophied papillæ, skin tabs, or anal stenosis. In order to care for the fissure successfully, these conditions must be cleared up, and when this is done the surgical care of the fissure had just as well, and better, be done at the same time. For these reasons the percentage of fissures which should be treated medically is relatively small.

One of the first requisites for a permanent cure is that the patient must have an anal canal large enough to permit the passage of a normal sized stool. If anal stenosis exists, due to spasm of the sphincters or inflammation about the pectinate line, but with adequate mucosal lining, dilatation may be sufficient to restore a normal opening. If on the other hand, as is often the case, the patient has an anal canal which is congenitally small, this condition can only be relieved by surgically enlarging the diameter of the anal canal to an adequate size.

Whether or not one hospitalizes patients with anal fissure depends to a great extent upon how

much surgery one is willing to attempt in his office. The majority of not too complicated fissures can be treated as ambulant cases, but not with the same degree of comfort for the patient as though he were hospitalized for a few days. I think it is inadvisable to attempt office care in the case of highly nervous individuals, or where contemplated surgery is quite extensive. Almost any case of fissure can be operated in the physician's office, but without question it is many times not advisable to do so. Whether done as an ambulant case or in the hospital, the principle involved in the cure of fissure is the same. The outline of the method we usually employ is as follows: Anesthesia may be either local infiltration, sacral, spinal, or general. If done in the office, we always use local infiltration, employing one to two ounces of one per cent procaine solution, which is injected about the entire circumference of the anal canal, using a 2 inch 18 gauge needle. In the hospital, we usually employ a low spinal anesthesia, using 35 mg. of procaine in 1 c. c. of solution. This gives better relaxation than general anesthesia, and is less disagreeable to the patient than other forms of local or regional anesthesia. Following anesthesia, 5 c.c. of one of the oily anesthetics (usually nupercaine in oil, is infiltrated underneath the quadrant of the anal canal where the fissure is located. This gives a long anesthetic action which tends to lessen postoperative spasm, making postoperative dressings less disagreeable. The anal canal is how gently dilated as far as possible without breaking the anal mucosa, or tearing the fibers of the sphincter muscle. If it is found that the anal canal is congenitally small in diameter, a posterior incision is made deeply enough to give a normal sized outlet. One must ascertain if there is a submucous sinus at the upper end of the fissure connecting with an infected crypt. If so, this must be divided through. This is essential, and if it is not done recurrence is certain. The sentinel pile, if present, is removed. The base of the fissure will be seen to be composed of the fascia of the sphincter sheath, and, if of long duration, perhaps some fibrous tissue. It is necessary that this be incised, for, as has

been stated, the epithelial cells will not firmly adhere to such tissue. If the person has a large easily dilated anal canal, this incision need be only deep enough to divide the scar or fascia. This permits an adequate blood supply from below and insures the formation of a bed of granulation tissue to which the epithelium will firmly adhere. Where the anal canal is congenitally small or cylindrical in shape, and enlarging is necessary, the incision should be carried deeply toward the coccyx, so that the anal canal becomes conical in shape with the base of the cone external. When this wound heals, the anal outlet will remain large enough for adequate sized bowel movements (Fig. 3). Any overhanging edges of tissue along the incision, together with any scar tissue, is removed. At this time a triangular section of skin is removed at the outer end of the incision—the base of the triangle being external. This permits the external portion of the wound healing before the internal portion does. A small piece of gauze is placed in the wound, but is not replaced after the gauze comes out on the third or fourth day. Dressings must be continued until the wound is entirely healed—usually three or four weeks. The most important point in postoperative care is that the wound be kept open and the epithelial tissue be compelled to bridge across from within, outwards.

This paper is not presented primarily to describe a method of operating upon fissure, but rather to point out the reasons why fissures so often fail to heal following what may seem to be adequate medical or surgical care. These reasons are three:

1. The base of the fissure is usually fascial in character. Hence granulations do not form so that the epithelial cells have an adequate base to adhere to.
2. The margins of the fissure are not fixed, but move freely on this fascial layer.
3. The anal canal is often congenitally small and no attempt is made to enlarge it to adequate size. If this is not done, even though healing occurs, the first large stool will bring about a recurrence.

TRANSURETHRAL RESECTION OF THE PROSTATE GLAND*

C. D. CREEVY, M.D.

Minneapolis, Minnesota

IT IS trite to say that the last ten years have witnessed an upheaval in the surgical treatment of the obstructing prostate. The 1927 Quarterly Cumulative Index Medicus contained but five titles concerning transurethral operations upon the prostate to fifty-three dealing with prostatectomy. Nine years later there were eighty-five articles on transurethral operations to fifteen on prostatectomy.

The Development of Transurethral Operations

The notion of operating upon the gland through the intact urethra occurred to Guthrie in 1834, and to Mercier and Civiale a few years later; and toward the end of the last century Bottini's cautery was rather widely used. These methods were abandoned after Freyer's report of his success with suprapubic prostatectomy, and were almost forgotten until a few years ago, since which time they have been the subjects of many a lively debate.

Transurethral operations were discarded because the early instruments did not permit operation under vision, and hence gave unsatisfactory results with many failures and deaths. Prostatectomy, on the other hand, was technically easy, gave good functional results, and its mortality, while high, was regarded as inevitable because of the age of the patients and their almost uniformly debilitated condition which resulted from their natural desire to put off a very hazardous operation until life without it became intolerable. The methods of handling the patients and the technic of operation were improved steadily until, by 1927, the literature contained reports of mortalities as low as 3 per cent for perineal and 5 per cent for suprapubic prostatectomy, and of excellent functional results. Why, then, the change?

The Status of Prostatectomy

The facts concerning prostatectomy in 1927 (and now as well) may be stated thus: Prostatectomy of any type involves a stay in the hospital

averaging fourteen days before and thirty days after operation.⁸ During the preoperative period a catheter must be worn; for a variable time after operation the patient is wet and malodorous. The risk is estimated at from 3 per cent⁴ for the perineal operation in the hands of experts to 25 per cent⁶ for the suprapubic operation in the hands of beginners and averages no less than 8 per cent⁷ in good hands; the suprapubic operation carries little, and the perineal considerable, danger to the control of micturition.

In other words prostatectomy is likely to be dangerous, is usually associated with a great deal of discomfort, and involves a considerable economic drain upon the elderly patient. The last has been an especially serious problem during the past few years.

The Status of Transurethral Resection

What, on the other hand, can be expected of the transurethral operations?

After the failures of the last century, Young¹⁰ in 1909 and Caulk³ in 1920 evolved the punch which has been so successfully modified and used by Braasch, Bumpus,² and Thompson.⁹ More recently, Stern and McCarthy have devised, and Davis⁵ and Alcock¹ have used, with great success, the resectoscope, which employs a wire loop activated by high frequency (diathermy) current.

With either type of instrument in the hands of a competent operator, large amounts of tissue may be removed successfully with relatively little risk. Compared to suprapubic prostatectomy, which may be performed with a dissecting set and a strong index finger, transurethral resection requires expensive, delicate equipment, the use of which may be mastered only by great perseverance, and then only by an experienced cystoscopist. Why should the urologist abandon a simple, standardized, speedy (for him) operation, for one which is difficult, tedious (for him), and unstandardized?

The reasons are simple.

The period of preparation with the catheter is shortened materially, and may be omitted in as high as 60 per cent (Thompson); the risk of

*From the Urological Division of the Department of Surgery, the Medical School, Minneapolis. Presented before the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 3, 1937.

operation may, under favorable conditions, be reduced to as low as 1 per cent (Caulk, Davis, Thompson); the wet, odoriferous period is eliminated; and the postoperative stay in the hospital is shortened.

Thus, risk is reduced and the economic drain upon the patient is very much less. Proof of these facts is found outside the papers of the proponents of resection in the increasing numbers of patients who, having conferred with friends already operated upon by this method, readily submit to it. This fact accounts for the numerous reports of very large series of cases, particularly from the middle west, which have led eastern urologists to hint delicately that the middle westerners are doing transurethral operations upon patients who do not need treatment.

Objections to Resection

Certain objections to the method are frequently heard. Chief among these are the dangers of hemorrhage, of incontinence, of missing a cancer which might have been removed completely by prostatectomy, and of early recurrence of obstruction.

The tedious character of the operation, the cost of the necessary equipment, and the difficulty in learning the technic constitute objections of a sort which cannot survive critical analysis by anyone interested in the patient's welfare. I am confident that transurethral resection will always remain an operation for the experienced cystoscopist well trained in its use.

The danger of postoperative hemorrhage is small as the operator gains experience; it is, moreover, easily handled. Two patients in the last 345 cases done at the University Hospital (0.6 of one per cent) have required cystostomy for hemorrhage, none within the past year.

Various rumors have been heard concerning the frequency of permanent incontinence of urine after resection; in my experience, there has been one case in 627 (0.16 per cent).

The consequences of missing, by transurethral resection, a small cancer surrounded by hypertrophied tissue which would be enucleated at prostatectomy are not too serious. While Young¹¹ has reported 60 per cent of five year cures of cancer among those surviving radical perineal prostatectomy, only twenty-four of 258 cases were operable and only eight of these survived the five year period. This represents an incidence of five year cure in the whole group of 3

per cent. Since not more than 20 per cent of enlarged prostates are the seat of malignancy, the opportunity for cure which is lost if transurethral resection replaces prostatectomy can not exceed 0.6 per cent, a loss more than compensated by the lower mortality of the transurethral method. This percentage of cure is obtained only with *radical* prostatectomy, not with the standard enucleation.

That danger of recurrence of obstruction with benign hypertrophy exists cannot be denied, since pathological tissue is left behind from which regrowth may occur. How great this danger is cannot be stated as yet because sufficient time has yet to elapse since the method was first used in relatively large glands. The few cases of recurrent obstruction which I have had have been due to incomplete operation.

All operators will, I believe, have recurrences in their early cases because of the removal of too little tissue; during the last year, the average amount of tissue removed per patient in my series was 26.6 grams, an amount closely approaching that (30 grams) removed in two thirds of a series of 450 consecutive prostatectomies by Alcock. Since symptoms exist in the average case for five years before relief is sought, and since my patients averaged sixty-six years of age, I do not believe that recurrence will constitute a serious problem.

Technic

This may be mentioned here only in passing. Whether the punch or the diathermy loop is used, the objective is to remove all the prostatic tissue which protrudes into the bladder or prostatic urethra so as to make the latter funnel shaped with a round or oval lumen. The tendency of the remaining tissue to move into the urethra because of its flexibility must be considered, and enough tissue removed to compensate for it.

Hemostasis is obtained by the electrocoagulation of individual bleeding points, and postoperative drainage is secured by a large (24 French) inlying catheter which is watched closely and irrigated frequently to prevent plugging by blood clots. The importance of free drainage cannot be overemphasized. It must be continued until there is no discoloration of the urine by blood, usually about three days. The minimum period of hospitalization after operation should be a week, and the patient should be un-

der the observation of a physician for two weeks longer.

The Indications for Transurethral Resection

The selection of resection instead of prostatectomy depends upon the individual surgeon. If he is inexperienced or prejudiced against the method, he will do well to limit his efforts to the contracted, fibrous glands, small carcinomas, and to small hypertrophies of the median lobe, while the operator of greater experience may readily and safely remove more than a hundred grams of prostatic tissue uninfluenced by the anatomic type of hypertrophy present, and will perform prostatectomy in but 2 to 5 per cent of the cases. I am certain that this will continue to be true unless an unexpected number of recurrences take place in the future. The general surgeon will probably continue to confine himself to prostatectomy.

Indeed, for the surgeon who performs cystoscopy and operates upon the prostate only occasionally, two-stage suprapubic prostatectomy will remain the treatment of choice unless we experience unforeseen developments in therapy with the x-ray or with endocrine preparations, both of which, at present, appear to promise very little.

Summary of Results

Between April, 1930, and April 15, 1937, I have done 761 resections in 627 patients, chiefly with a modified Stern-McCarthy resectoscope. In 1930, eighteen patients (45 per cent) underwent resection while twenty-five were submitted to prostatectomy. In 1936, 160 (98.2 per cent) underwent resection and three prostatectomy (1.8 per cent).

The patients averaged sixty-six years of age, 30 per cent being past seventy, and 4 per cent past eighty, while one was five, one sixteen, and one twenty-one years old. Fifty-two per cent had complete retention of the urine, and the residual averaged 460 c.c. before operation. Preliminary cystostomy was done in 11 per cent (6 per cent in 1936) either for impaired renal function, acute infection, or the removal of large stones.

Fifteen per cent of the patients had cancer, 7 per cent had stones, 4 per cent had neurogenic vesical dysfunction, and 2 per cent had diver-

ticula large enough to require removal; in other words, there was serious local pathology in the bladder in 28 per cent. Nearly all had pus in the urine; the two-hour phthalein excretion averaged 50 per cent (normal 70 per cent or more).

Twenty per cent of the patients had two resections before leaving the hospital, and a very few had three. Only one patient (2 per cent), done this year, has needed a second resection. The amount of tissue removed averaged 3 grams per patient in 1930 and 26.6 grams in 1936. Only one patient has been refused operation, and this because of far advanced pulmonary tuberculosis.

There have been twenty-one deaths or 3.3 per cent. By a process of calculation well known to all, this can be reduced to 2.75, but I cannot justify it. There have been no deaths in the last eighty consecutive cases.

In general, the results have been good, the postoperative residual having averaged less than 30 c.c. Deaths have been due to infection, and this has been responsible for most of the postoperative complications such as epididymitis, peri-urethritis, pyelonephritis, et cetera. There have been fifteen postoperative hemorrhages, four of which (0.66 per cent) have required cystostomy, and none of which has resulted fatally. Partial incontinence for twenty-four hours is not uncommon, and a few patients have left the hospital incontinent, but only one of the whole group has remained so.

Pyuria occurs postoperatively in all the patients, but usually is not associated with symptoms and disappears after six to twelve weeks. Hence, it is not treated unless it persists beyond that time.

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MEDICAL QUESTION COURT*

CHAIRMAN W. A. O'BRIEN: *"I have under my care a boy suffering with a moderately severe spastic condition which I have called Little's disease. His mentality seems to be all right, although he has not yet started to school at the age of seven. I have read of some treatment given in New York which can be used for this trouble."*

DR. F. C. RODDA (Minneapolis): We understand the term Little's disease to indicate some definite organic disturbance of the brain as the result of inflammation hemorrhage or congenital defect. When it affects certain areas of the brain, there may be mental deterioration. When the motor areas are affected, there develop the well known spasticities. There is lack of muscle control and the more powerful muscles overcome the weaker ones, so that the individual is incapacitated more or less.

I think the work referred to is that done by Dr. Carlson. He was an exceedingly high grade spastic diplegic, almost a helpless individual. Largely through his own efforts, he has overcome his difficulties, has acquired a college education and now has a school for treating spastics. In his school, his first effort is to try to get the patient to relax completely and then to train the muscles. His school is in New York and he transfers it to Florida in the wintertime. Academic instruction is carried on along with the muscle training. The results have been gratifying in many instances. However, many large cities have similar institutions which are attempting to accomplish the same results with the same methods. In Minneapolis, we have a Curative Work Shop where good work is being done in helping such patients.

CHAIRMAN O'BRIEN: *"I have children brought to me who are rather pale. Examination of their hemoglobin does not show very much reduction. Should iron be used in these cases or is some other treatment advisable?"*

DR. O. W. ROWE (Duluth): I think a little history with that case would be of considerable value. Possibly as valuable as a blood examination. The child probably is suffering from one of the deficiency anemias, possibly a dietetic deficiency. He may have exhausted his iron supply and his food doesn't contain enough iron, or at least enough iron in an available form, to meet the new demands.

It might be post-infection anemia. Possibly the toxin has had something to do with the production of the anemia, or probably the child just quit eating while he was seriously ill and then didn't get his appetite back. In any case anemia is simply a decreased amount of hemoglobin, and hemoglobin has iron as its most important constituent. So why not give him some? The kind of iron that is probably best is one of those that are soluble—water-soluble. We like the double citrate of iron and it can be made palatable in a 50 per cent

solution. Then everybody will be happy. The mother is given some medicine, the boy likes the medicine, and the doctor gets results.

CHAIRMAN O'BRIEN: *"Do you use convalescent serum in measles? I have not tried it, but some of the parents at a P.T.A. meeting asked me about it."*

DR. W. B. RICHARDS (St. Cloud): I think I covered that pretty well in the paper that I read this afternoon, but to reiterate and to add a bit, I would say that I have used convalescent serum to give a passive immunity to measles and I have used it in treatment in 10 c.c. amount. In a debilitated year old child I found that it prevented the disease entirely or modified it. I brought out this afternoon the use of placental extract. I have used some of that, especially in treatment. In two cases of measles and pneumonia I used the placental extract and it reduced the temperature and the broncho-pneumonia cleared up very rapidly—much quicker than with the usual therapy. So I would say that convalescent serum is good, but measles globulin will probably supplant it. It is easily obtainable and it is a standardized mixture.

CHAIRMAN O'BRIEN: *"In the treatment of patients with prostatic obstruction by resection when is the ideal time to recommend the operation? I have been informed that one should wait to see if the obstruction will clear up without treatment. Please be specific."*

DR. E. N. COOK (Rochester): Of necessity this question must be answered in a rather general way. I would say, first of all, that the optimal time for performing transurethral prostatic resection would be before there has been any serious gross pathologic change in the upper or lower part of the urinary tract.

Those of us who are enthusiastic about transurethral prostatic resection have been accused of doing this operation many times when the symptoms were of a mild degree, but when a man comes fifteen hundred miles to see me and he gives a history of getting up two or three times at night, a small urinary stream, 100 c.c. of residual urine, and a moderate amount of difficulty in micturition, I feel that even then, without any evidence of gross pathologic change in the upper part of the urinary tract and little or none in the bladder, if that man has an obstruction at the neck of the bladder he is entitled to a transurethral resection.

CHAIRMAN O'BRIEN: *"Many of my new mothers seem to be indifferent to breast-feeding of their children. I realize that good substitutes can be used, but I am old-fashioned enough to think that breast-feeding is better. Can you give me some good arguments to use on my patients?"*

DR. F. C. RODDA (Minneapolis): I understand this same question was put to a class in hygiene in high school. A bright boy, who might have been absent at

*Held at the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 3, 1937.

that lecture, came back with the answer that breast milk is better than cow's milk for feeding babies because: (1) it is cheaper; (2) it does not sour on picnics; (3) the cat cannot get into it. He evidently was cognizant of the possibilities of loss and contamination of cow's milk.

We do, however, have some good arguments in favor of breast milk. In brief, it is well established biologically that the milk of a species is best for the offspring of that species. It is fair to assume that breast milk is best for the baby and cow's milk is best for the calf. Milk from one species may be allergic to the offspring of another species. It is well known that cow's milk is quite often allergic for the infant. Then, there is the question of immunity in the newborn which is acquired through the mother's blood and is kept at a high level for some time through the breast milk.

True, with cleaner milk, better hygiene and the diffusion of knowledge of simple infant feeding, artificial feeding of infants is considerably safer than it was years ago. Still, as recently as three years ago, Dr. Grulee of Chicago, out of an enormous experience of the Welfare Clinics of that city, was able to determine statistically that the baby artificially fed ran nine times the chance of becoming ill as compared with the breast-fed baby.

CHAIRMAN O'BRIEN: *"How do you advise the mothers of children about vitamins? They seem to be disturbed by all the advertisements they read."*

DOCTOR O. W. ROWE (Duluth): Our present conception of the use of vitamins is quite different than it used to be—that is, we are not thinking of them as a means of preventing only certain deficiency diseases. It is a much broader subject and it is tied up with the whole development of the child. However, my answer to the mother would depend I think a little on her intelligence. I think I would point out to her that those ads came from the salesmanager of a manufacturing house, who was naturally much interested in disposing of his goods. Then, if she is really quite intelligent, I might admit that physicians have gone out on dietetic tangents at times and in this case they had considerable reason because we know what happens to children who don't get vitamin D in cod liver oil, or to babies who don't get Vitamin C in citrus fruit juices. One gets rickets and the other scurvy.

Then I should point out to her that it would be almost impossible for her to give a diet that is adequate in other ways that does not contain enough vitamins. In other words, if she gives her child some vegetables, part of them raw, some fruit, part of the fruit raw, egg yolk and dairy products, she will get in enough vitamins and she can ignore the ads.

CHAIRMAN O'BRIEN: *"What do you recommend for thumb-sucking in a young baby who appears to be getting enough to eat (breast-fed)?"*

DR. W. B. RICHARDS (St. Cloud): That sounds like a very simple question to answer, but it isn't. These problems are behavior problems. If this baby is getting sufficient to eat and is a small infant, restraining the

hands so that the child can't get the thumbs into the mouth is one way. Most babies suck their thumbs as they lie in their cribs, and we can bind their hands down or put them in these bunny-wrappers that they sleep in with their hands inside so that they can't get them into their mouths. If the child doesn't have to be covered, we can put mittens or stockings on his hands. The main idea is to keep them from getting their hands into their mouths. There are other methods of covering the thumbs, such as metal appliances or taping them with rough adhesive so that it won't be a pleasant sensation for them to get in their mouths. Of course, we run into very many different problems, but when they are very small infants I think the above mentioned recommendations will suffice.

As they grow older and nothing is done to break them of the thumb-sucking habit, children will very often substitute another thumb or finger for the one already covered. However, with older children this is a real behavior problem and I will close by saying that if you can keep the smaller infant from putting its thumb in its mouth the habit won't be formed.

CHAIRMAN O'BRIEN: *"I have a patient who has had a stone removed from the kidney. She is most anxious for me to prescribe a diet which will prevent the re-formation of stones. Is a diet advisable or what other advice should I give them?"*

DR. E. N. COOK (Rochester): This patient and the doctor are probably familiar with the suggestions of Higgins, of Cleveland, in regard to the use of an acid-ash diet in the prevention of stone. I just recently returned from a clinical trip to New York, Chicago, Baltimore, and Philadelphia. The experience of the men in these places and our experience in Rochester has been that these diets are not of much value in themselves. First of all, if the type of stone that this patient has could be determined we would have a definite means of applying some prophylactic measures. If it is a uric acid or cystine stone, certain metabolic adjustments will have to be made. If it is more of the common garden variety of stone, the phosphate, carbonate, calcium, or magnesium phosphate stone, I certainly would first suggest being sure that there is no obstruction to the drainage of urine anywhere in the urinary tract; second, that there is a large amount of fluid ingested; third, that the pH of the urine is kept on the acid side, preferably below 6.2 to 6.4. This can be done very simply by the administration of ammonium nitrate or ammonium chloride during alternate weeks. The acid-ash diet will be of help, but is not a panacea in keeping down the formation of stones. Every effort also should be made to eradicate any infection in the urinary tract and any foci of infection also should be removed.

The recurrence of urinary lithiasis is an individual thing. There apparently are times when from one to thirty, forty or fifty stones will form, and then without any apparent change in treatment the formation of stones will stop. These other measures will possibly stop the formation of stones and I think they are worth the trial.

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BUSINESS MANAGER
J. R. BRUCE

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Socialistic Trends

THOSE who are steering the ship of State would do well to study ancient and modern history. The philosophy of government developed by the Roman Republic became the pattern for modern representative forms of government including that of our country. It is true, the life of the Roman Republic was torn by internal strife until the strong hand and wisdom of Augustus Cæsar established peace throughout the Empire, which enabled Roman civilization to flourish. However, according to Hadley,* socialistic policies more than any other one factor, eventually led to the downfall of the Roman Empire.

It was socialism joined by the lawless elements in Italy after the armistice that led to the rise

of the Fascists under Mussolini, as well portrayed in Mussolini's autobiography.† Undoubtedly, Mussolini saved Italy from chaos, but in doing so stifled democracy. Much the same train of events took place in Germany with the acquisition of power by Hitler. Communism in Russia has given place to state capitalism with a dictatorship just as absolute as in Italy or Germany.

The trend in America is certainly along socialistic lines. We have been in the throes of a revolution, bloodless it is true, in which money is being taken from those who have and is being given to those who have not, on the grounds of social justice. This procedure tends to reduce the rewards of industry and place a premium on laziness. Those who are financially successful are, as a rule, the ones who should be best able to direct surplus funds into remunerative business to the benefit of labor. This is being discouraged by excessive taxation in order to derive funds for priming the pump, which however much it once needed priming, no longer needs it. After a pump once gets to working, is there anything more foolish than wasting energy in pouring more water into it?

There seems to be no limit to the number of activities the Federal government has entered, in competition with its citizens. Can political appointees be expected to be as efficient as the officials in private enterprise? Deficits in governmental enterprises, however, can be made up by taxation, whereas the private enterprise goes bankrupt.

The Veterans Bureau is only one of an estimated 250 business activities which the Federal government is, at present, carrying on. The Veterans Bureau was established to provide for those who suffered from military service. In spite of spirited and repeated protests on the part of the medical profession, Congress has gradually added benefits available to veterans, until now 80 per cent of the work of the Veterans Bureau is for sickness and disability unrelated to the war. The article by Aring and Bateman‡ shows only too clearly how the government

†Mussolini, Benito: My Autobiography. New York: Charles Scribner's Sons, 1928.

‡Aring, C. D., and Bateman, J. F.: Nurturing a national neurosis. Jour. Am. Med. Assn., 109:1092, (Oct. 2) 1937.

*Hadley, Herbert S.: Rome and the World Today. New York: G. P. Putnam's Sons, 1927.

treasury is being tapped by veterans diagnosed as psychoneurosis cases who are not, by any stretch of the imagination, entitled to compensation.

The question is whether unwise and hurried legislation formulated by politicians and theorists rather than statesmen is going to continue and whether the traditional freedom of personal initiative in our democracy is to be replaced by state capitalism and all its attendant evils. It is high time for those who are concerned for the future of the country to awaken and through a wiser choice of representatives effect a right-about-face in the path we have taken.—*C.B.D.*

Tuberculosis and Medical Students

IN our satisfaction that the mortality in tuberculosis has been cut in half in recent years, there is danger of our forgetting that tuberculosis has not been conquered. There is still much too much tuberculosis and until this disease ceases to exist and practically no one reacts to the Mantoux test, the battle will not be won.

Tuberculosis has been entirely too prevalent among medical students in the past. A quarter of a century ago university students in general rarely received any semblance of periodic physical examination. Today the situation is different. In most universities students are examined each year and efforts are made to detect signs of tuberculous infection. The students are urged, and in many universities required, to take a minimal amount of exercise for the purpose of keeping physically fit. When it comes to the post-graduate students, the importance of the need for a certain amount of exercise, sunlight and fresh air seems to be forgotten. Scholastic competition is greater than ever and the tendency seems to be all work and no play designed for physical well being. This applies to medical students particularly. Recent known instances where medical students well along in their course or doing post-graduate study have developed pulmonary tuberculosis only serve to call the situation to our attention.

After all, we live but once and the complicated human machine requires certain care, if it is to last three score years and ten. Tuberculosis is a disease of youth, and the natural extravagance of youth too often ignores the requirements for health. The medical course is strenuous, but long

hours should not be allowed to crowd out hours for physical and mental relaxation, even if it necessitates an increase of a year in the medical course. If medical students fail to realize the importance of physical care, medical school authorities should include physical culture in their curricula.

The Decline in Maternal Mortality

SOME twenty-five years ago, Dr. J. Whitridge Williams of Johns Hopkins called attention to the disgracefully high maternal mortality rate in this country. The rate was among the highest in the so-called civilized countries and was considerably higher than in most European countries. Attempts made to explain our high rate on the basis of a difference in compiling vital statistics were not successful. It is a matter of considerable satisfaction, therefore, to note that a marked reduction in our maternal death rate has taken place since 1929. From a high point of 70 maternal deaths per 10,000 live births in 1929, the rate fell to 58 in 1935 with indications of further decrease since then.

Several factors have accounted for this high rate. About a third of the deaths are due to septicemia, another third to toxemia and the remainder to various factors.

Half of the deaths from sepsis are due to abortions and the increase in criminally induced abortions in recent years is cause for concern. Most of them are probably performed by members of the medical profession, some by those on the fringe of the profession, such as osteopaths, chiropractors and midwives, and some by the women themselves. The procedure is not at all limited to the unmarried. In one series of 10,000 clinic patients in New York City some 15 per cent of pregnancies had been terminated by abortion during the first five years of married life. After ten years of married life the rate rose to 40 per cent. In another series of 3,000 pregnancies in New York City about 30 per cent terminated in abortion, three-fourths of which were induced. The illegal status of the operation doubtless influences the incidence of infection.

Deaths from toxemia and eclampsia have been reduced by one-third since 1930. This is probably due in large part to the publicity campaign for early medical consultation in pregnancy.

The medical profession has shared, to some

extent, in the blame for the high mortality rate. The resort to unnecessary operative procedures and the overuse of sedatives and analgesics may be mentioned.

The publicity and educational campaign which has been carried on in recent years, both in medical and lay circles, has undoubtedly borne fruit. Students have been better trained in obstetrics, unnecessary interference in delivery has been decried and women have been urged to consult the profession at an early date. With the continuance of this program many more thousands of lives should be saved.

We take great pleasure in announcing the appointment of Dr. Gilbert Cottam of Minneapolis as assistant editor of MINNESOTA MEDICINE. Dr. Cottam has been much interested in medical journalism and is well known as the editor of *The Bulletin of the Hennepin County Medical Society*. Dr. Cottam takes the place of Dr. C. A. McKinlay, resigned, and we take this opportunity to express our appreciation of the coöperation and service rendered MINNESOTA MEDICINE by Dr. McKinlay as assistant editor.

Thirty-six deaths, for the most part in the south central area of the United States, due to a preparation of sulfanilamide in elixir form and dissolved in diethylene glycol, have been reported thus far. The entire force of the Federal Food and Drug Administration is at present tracing shipments of the poisonous drug in this country and in Canada. In view of this experience and similar experiences with blindness resulting from the use of dinitrophenol and deaths following liver damage caused by cinchophen, it is evident that the present Federal Food and Drug laws require revision.

Correction

In an editorial entitled "Coramine" which appeared in our June, 1937, issue a statement was made that "ephedrine . . . if given intravenously is actually dangerous." This should have read "epinephrin" instead of "ephedrine."—EDITOR.

In Memoriam

Ralph St. John Perry

1864-1937

DR. RALPH ST. JOHN PERRY, formerly of Farmington, but for the past twenty-five years a resident of Minneapolis, died at the Veterans' Hospital, October 4, 1937.

Born in Bainbridge, New York, seventy-three years ago, Dr. Perry received his medical degree from the Indiana Medical School and began practice in The Isle of Pines. Over forty years ago he moved to Hampton and after a few years began practice in Farmington.

While a resident of Farmington, Dr. Perry served on the village council for several years and was identified with the civic progress of the town.

About twenty-five years ago he moved to Minneapolis where he continued practice. During the World War he was an officer in the medical corps and for the past fifteen years has been with the Veterans' Bureau in Minneapolis.

Dr. Perry was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He is survived by his widow and a son, Ralph St. John Perry, Jr.

Hans M. Lichtenstein

1866-1937

DR. HANS M. LICHTENSTEIN, Winona, died at Rochester on August 6, 1937, at the age of seventy.

Dr. Lichtenstein was born October 22, 1866 at Königsberg, East Prussia, Germany, and was graduated from the University of Tübingen, Germany, in 1888.

As a young man he served for a number of years as a ship's surgeon and later lived in New York City for about two years before coming to Winona.

Dr. Lichtenstein joined the Winona County Medical Society June 16, 1894, and was a member of a group of physicians known as the Associated Physicians and Surgeons in Winona for several years. He was a member of the Minnesota State and American Medical Associations, as well as the Winona County Medical Society for over forty-four years.

Dr. Lichtenstein is survived by a daughter, Mrs. Robert Schweitzer, and three grandchildren who live in Saint Paul.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the

Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

Case for Minnesota

IT has not yet been determined if the Minnesota State Medical Association must pay the Social Security Tax for unemployment and old age benefits.

The information and statement printed below constitute Minnesota's case for exemption. This compilation should be read by every member because it is a brief statement of medical activities in Minnesota and it may provide much valuable education to members themselves who have not taken an active hand in the affairs of organized medicine.

The decision as to whether or not the association should be subject to the tax is less important, probably, than the definite establishment of the organization as an educational body dedicated to the advancement of scientific knowledge and public health education rather than to the individual enrichment of its members.

It is of interest to note again in this connection that four large state medical associations have already been declared liable to the tax. Four others, also large and enterprising, have been exempted. It remains to be seen how Minnesota's program will be judged in Washington.

Minnesota State Medical Association Activities

1. *Newspaper Service*.—Weekly stories on health and disease prevention sent to 500 Minnesota newspapers, weeklies and dailies. Designed to supply rural and small city papers which cannot afford to buy the syndicated health services, with authoritative information on health. Approved by the editorial subcommittee of the Committee on Public Health Education; distributed through the Minnesota Editorial Association. Auspices—Committee on Public Health Education.

2. *Radio Talks*.—Given weekly by Dr. W. A. O'Brien, professor of Pathology and Preventive

Medicine, University of Minnesota, over WCCO, now in its ninth consecutive year. Auspices—Radio Committee.

3. *Speakers' Bureau*.—Designed to supply lay groups of all kinds, including P.T.A. organizations, luncheon clubs, church groups, schools, with speakers on health and on disease prevention. Six hundred and sixty-six talks given under the auspices of this bureau in 1936-37. Auspices—Committee on Public Health Education.

4. *College Lecture Course*.—A course of lectures on disease prevention and health given to all colleges in the state by a group of medical lecturers; arranged in coöperation with the Minnesota Public Health Association, Christmas Seal organization of the state. Auspices—Committee on Public Health Education.

5. *Speakers' Library*.—Package service of material supplied to any physician on request to assist him in the preparation of talks before lay groups. Auspices—Committee on Public Health Education.

6. *Committee on Public Policy*.—Organized to keep in touch with public and professional opinion in respect to public health and the practice of medicine; to represent the Association in the effort to secure for all the people of the State of Minnesota the maximum protection of the public health, the highest standards in the practice of medicine and, from an educational viewpoint, the advancement of the science and art of medicine.

7. *Publication of a monthly scientific journal* for which two dollars out of the yearly dues of each member is set aside. This journal is not now and never has been self-supporting. Auspices—Editing and Publishing Committee.

8. *Post-graduate Education*.—Coöperation with the University of Minnesota Extension Division and with the University Center for Continuation Study in post-graduate courses for

members; also coöperation with the Division of Child Hygiene of the State Board of Health in Refresher Courses on obstetric and child care held in various parts of the state. Auspices—Committee on Hospitals and Medical Education.

9. *Committee on Medical Economics.*—Study of social trends and of the adaptation of the practice of medicine to these trends; also of all plans for the extension of medical care to indigent and low income groups; information on these and related matters to the public and to the profession.

10. *Annual Meeting.*—A large, yearly scientific congress with extensive scientific exhibits, and, during the same period, public health meetings and a public health exhibit, together with special large conferences for professional workers of all types who are associated in the care of the sick and in the fostering of public health. Several thousands of persons outside the medical profession view the exhibits and attend the sessions each year. In spite of income from commercial exhibits this meeting has always been an item of large expense to the Association and is an educational feature for various lay groups.

11. *Assistance to all federal and state agencies* engaged in administration of medical care to relief clients, crippled children, recipients of old age assistance, etc., to the end that the best possible medical service will be extended to all unfortunates with a minimum expense to the agencies involved.

12. *Medical Advisory Committee.*—Study of conditions within the practice of medicine that give rise to malpractice suits; also education of the doctor to a greater degree of responsibility to the patient with a view to eliminating all occasion, so far as members of the profession are concerned, for malpractice litigation.

Special Activities

In addition to the above routine services are the following special activities carried on by special and standing committees of the Association:

1. *Committee on Diabetes.*—Special public education on the prevention and control of diabetes through talks, magazine articles, newspaper stories; a booklet published in 1934 called "Diabetes, How to Make It Harmless."

2. *Committee on Cancer.*—Public education on the necessity for early diagnosis and treatment of cancer; coöperation with the Women's

Field Army of the American Society for the Control of Cancer in its campaign of public education on cancer; post-graduate cancer education for the medical profession.

3. *Heart Committee.*—Public education on the prevention and control of heart disease; also special education on scientific aspects of its control for the medical profession.

4. *Committee on Maternal and Child Welfare.*—Education to the public on the importance of proper pre-natal and post-partum care for mothers and proper care for babies; education to the medical profession on the same subjects.

5. *Committee on Deafness Prevention and Amelioration.*—Education to the public on the need for early discovery of children afflicted with hearing loss and on the need for prevention of conditions affecting loss of hearing; the committee goes into the schools upon request with surveys to discover children in need of attention.

6. *Committee on Syphilis and Social Disease.*—Organized for education to the public on the need for early discovery and treatment for all victims of venereal disease; for education of the medical profession on these matters and for coöperation on the part of the entire profession of Minnesota with the United States Public Health Service in its attempt to control syphilis and social disease.

7. *Historical Committee.*—Engaged in gathering material for a history of medicine and public health in Minnesota.

* * *

As a supplement to the above information we submit, in further argument, the following:

You will note throughout our Constitution and the accompanying résumé of activities that our scientific work is directly of benefit to the public. Individually and in their organizations, physicians are constantly imparting essential information to the public on medical science and the public health. For instance—if, following our advice and our organized effort to vaccinate all babies at the age of six months, not more than one in 100 later develops diphtheria, is the result of financial benefit to the public or to the doctor? Such instances may be multiplied many times in the field of medicine as a whole and result in scientific progress and public health education.

Furthermore, this progress, with its accompanying effort to educate the public, is a direct saving to taxpayers. As a result of it, children

who might have been crippled by diphtheria and by many other preventable conditions are prevented from becoming an expensive public burden.

As the accompanying statements will show, the work of the association is financed almost entirely by the \$15 assessment paid yearly by the doctors themselves. Additional income derived each year from the sale of exhibit space to commercial exhibitors only partially pays for the public health exhibit and the public health meetings that accompany the annual meeting of the association. Dues assessed upon themselves by the doctors represent nine-tenths and more of the total income of the association and not one penny has ever been used for the individual benefit of any doctor. As a matter of fact, a great deal of time is given by officers and committee men at their own expense, frequently even for travel and hotel accommodations. You are aware of the fact, of course, that physicians are prohibited by law from organizing and incorporating for commercial purposes under the charter of their organization.

May we most respectfully urge in conclusion that we have sincerely attempted to organize and operate the Minnesota State Medical Association exclusively for charitable, scientific, literary and educational purposes. We most respectfully urge you to consider the fact that we have worked hard to maintain and elevate, wherever possible, the standard of medical education, and in every manner to promote the public health. This has been done without any regard whatsoever to financial remuneration. This organization has never, at any time, interested itself in legislation of a selfish character. The organization has never concerned itself with tax legislation nor any legislation affecting the pecuniary remuneration of the medical profession, nor the so-called business side of medicine.

In view of the above and of the accompanying documents, we feel sure that the Minnesota State Medical Association will meet all tests required for exemption from taxes under the Social Security Act.

(Signed) A. W. ADSON, M.D., *President*; GEORGE EARL, M.D., *Chairman of the Council*; H. Z. GIFFIN, M.D., *Chairman of the Finance Committee*; R. R. ROSELL, *Executive Secretary*.

Long Awaited Fee Schedule

The promised standard fee schedule for medical care of relief clients is now in the hands of county welfare boards and workers.

This new schedule is more detailed and undoubtedly better adjusted to the need than any heretofore developed for this purpose. It is notable among other things for provision of fees for hospital care, a provision that was absent from the famed "Number 7," the early bulletin from Washington that governed medical care under the FERA.

The schedule was prepared in the office of State Relief Administrator L. P. Zimmerman with the assistance of Dr. S. E. Gilkey of his staff. The medical fees are low in comparison with regular charges, of course, and there may be, here and there, an inequality or error which time and experience will make evident. As a whole, however, it is meeting with the general approval of physicians and it justifies the hope that, with uniform fees for the state and uniform standards, many injustices to patients and physicians may hereafter be corrected.

Patient Has Fee Choice

One paragraph in the regulations is especially important to physicians in view of the fact that these regulations are written to conform to the relief legislation passed at the extra session of the Legislature and are binding upon all counties which accept state aid.

The paragraph reads as follows:

Right of Selection

"Client shall have free choice of physician, dentist, hospital or other vendor, being limited only to those vendors who have indicated acceptance of schedules."

What About the Township Plans?

Several questions have already arisen in connection with care of the needy and use of the schedule. Some have been brought to Attorney General William S. Ervin for rulings and may still be subject to further ruling.

One of these has recurred regularly throughout the entire history of relief and care of the poor in Minnesota. In counties which operate under the township system, can the county welfare board, established under the law in each county, disburse assistance directly to eligible recipients or must the funds be allocated to the

various township boards in the counties for their own distribution to eligible recipients in their townships?

Knotty Question

The Attorney General's answer shows that the relief law has not answered that knotty perennial. He says, in part:

"... from the language used it is extremely difficult to determine the legislative intent. On the other hand, the Legislature made no distinction between the two systems of poor relief in providing for the allocation and disbursement of state relief funds, and the act taken as a whole indicates that the legislature had in mind the establishment of a uniform system of disbursement of state relief funds.

"Practical difficulties will be encountered regardless of which method of disbursement is adopted. For example, if the funds are allocated by the county welfare boards to the various municipalities and in turn disbursed by such municipalities to the recipients of relief, it will, for practical purposes, be impossible for the state relief agency to exercise the supervision contemplated by the act over such disbursements. Moreover, Section 13 of the act provides in part as follows:

Difficulties

"Any county or municipality requiring aid and relief shall contribute a sum which, in the opinion of the Executive Council and its authorized agency, is fair and equitable to be so borne by them, financial and economic conditions and the relief load of the county and municipality concerned to be taken into consideration."

"When one considers the number of towns, cities and villages throughout the state in counties operating under the town system, it is apparent that if the state relief agency is to be required to determine the contribution that each such municipality shall make the administrative work involved will be very great.

"If the amount required in the state funds is not raised by the municipalities it must be raised by the counties. In this connection we direct your attention to previous opinions of this office which hold that, even in counties operating under the town system, a county may have a poor fund and raise and expend money for poor relief . . .

A Plan Has Worked Out

"Chapter 89 (Extra Session Laws of 1937) is similar in many respects to Chapter 101, Extra Session Laws of 1935-36. We understand that in carrying out the provisions of said Chapter 101 the state relief agency took the position that it could not deal with all the various municipalities and that it would look to the counties as the responsible agency for the disbursement of state relief funds. In practically all of the counties a plan was worked out between the state agency, the county and the various municipalities that

was satisfactory to all parties concerned. When the Legislature enacted Chapter 89, it was cognizant of the procedure followed with reference to the disbursement of relief pursuant to Chapter 101 and we believe it is fair to assume that it was intended that substantially the same procedure should be followed with reference to disbursements made under Chapter 89.

Funds May Be Disbursed By County Boards

"... We do not feel that we should attempt to lay down a definite rule to be followed in every county. Wherever satisfactory arrangement can be made we believe the funds allocated by the state relief agency may be disbursed by the county welfare boards to the recipients of relief, even in counties operating under the town system. Arrangements with reference to the disbursements of state relief funds will undoubtedly be made by the state relief agency in cooperation with the various counties and municipalities."

Complications in Old Age Care

Another problem arises in the wake of the new fee schedule and in connection with medical care of recipients.

Shall the schedule apply to medical care for these beneficiaries of the Social Security Act?

The medical care of these recipients of aid is somewhat complicated by two considerations. The first is, that old age assistance grants are cash grants and not orders for service and that the recipient may presumably spend them where and how he wishes. The second is that the Attorney General has given an interpretation on the matter which would prevent inclusion in the budget of the recipient of money for any medical aid other than "charges for care of chronic ailments."

Physicians Should Confer

The entire matter of care for recipients of old age benefits will undoubtedly be the subject of further conferences. In the meantime, physicians and county workers should confer upon the advisability of using the relief fee schedule in setting fees for medical service for chronic ailments of these beneficiaries.

"Talk Less--Sell More"

Monthly Editorial prepared by the Medical
Advisory Committee

No profession has the opportunity of the medical profession to study human nature. The sick-room shows up all the fragility of the sick man's innermost soul. The medical attendant becomes the teacher, the minister, the lawyer, and the

prophet. To him secrets are told, confidences exchanged as to no other. Are we living up to the standard set by our public, or are we mere phonograph records to be played one against the other for the edification of a listening, criticizing and over-interested public?

Your Medical Advisory Committee finds that many nuisance suits are brought because the doctors are willing to discuss cases outside of the sick-room with neighbors, friends or even members of their immediate family who are prone to carry the news to others in an endless chain.

There is a legal responsibility in the repeating of findings, the publishing of cases with names inserted, the allowing of lay people in delivery or operating rooms without the consent of the patient or legal guardian. Especially is this true in case of the lower economic strata of society. Any slip-up in conversation or any word capable of misinterpretation may be the seed from which an ugly malpractice plant may spring.

It pays to talk less, study human nature more, and strive to make a good impression. Be jovial but not too sociable. Be stern but not too harsh.

The nation as well as our profession needs "a vast amount of human kindness and understanding" to meet its needs.

Postgraduate Study De Luxe

The editorial reprinted below appeared in *The Minneapolis Journal* of September 28. It is important not only for the information it gives about Minnesota's unique experiment in postgraduate medical education, but for the indication it gives so clearly of the place that this new move in education is assuming in the public consciousness.

Here are a few facts about the first course of the year, October 4 to 9, which may be of interest in connection with the *Journal's* editorial.

Thirty-seven physicians registered for the first course of the year—general subject, Diseases of the Heart. Thirty of these students-of-a-week lived at the luxurious Center on the Campus, parked their cars under the new Center building, went to class in the building and in the Twin City hospitals and at Lymanhurst school, came back each day for tea and informal discussion in the library at the Center.

The registration was much larger than the directors had hoped for; no more could be successfully accommodated.

Heard in Persia

Some of the students came from great distances, for example from China (one of the two Chinese students heard about last year's course in Persia); from Santa Barbara; from Montana; from the Dakotas.

The courses, as the editorial points out, were mapped with the aid of practicing physicians themselves and organized in coöperation with the Minnesota State Medical Association.

They are undoubtedly unique, and the enthusiastic directors are now convinced that they constitute the beginning of a new movement in education in the United States.

Further courses on Endocrinology, Diagnostic Radiology, Clinical Pathology and Proctology have been announced for the year. Information about them and about living costs and tuition can be secured from the Director of the Center for Continuation Study, University of Minnesota, or from Dr. William A. O'Brien, Medical Representative, at the same address.

"The Doctor Goes to School"

"Once again the University of Minnesota is leading the way in medical education. The postgraduate medical institutes, which open next Monday at the new Center for Continuation Study, are more than mere 'refresher' courses for practicing doctors—they are a commitment to the future, a promise that Minneapolis' reputation as one of the nation's great medical centers will shine even more brightly in the future than it has in the past.

"Postgraduate medical courses are not new in the academic world, but Minnesota can say, without boasting, that nowhere else in the country have they been so thoroughly planned, so carefully built according to the specifications of the practicing physician himself. More than two hundred doctors, practicing under varying conditions in widely scattered sections of the Northwest, drew the blueprints on which the courses are based.

"Doctors 'on the firing line' will be able to come to Minneapolis for brief but intensive study in highly specialized fields of medicine. They will study and work under the finest specialists in University classrooms and laboratories and Minneapolis hospitals. Back in their home communities, the doctors will be able to give their patients the benefit of the best that is being thought and done in the great world of medical science. Thus, the community as a whole is the gainer.

"The first postgraduate medical institutes at Min-

nesota were conducted last year, more or less on an experimental basis. They caught on in Northwest Medical circles. Hence the expansion of the idea.

"Minnesota's outstanding qualifications for such work are twofold. First of all, Minnesota has the men. The faculties of the postgraduate institutes are hand picked, every one. Man for man, they can be stacked against any medical faculty in the country. Minneapolis should be proud that in a total teaching staff of thirty-seven her own specialists have furnished twenty-one. Second, Minnesota has the equipment. The University hospitals, Minneapolis General hospital and Lymanhurst clinic, as well as Ancker hospital, St. Paul, will be used for the courses. The new continuation building on the main campus will be the doctors' home while they continue their education in Minneapolis.

"Looking into the future, medical educators are able to see—without undue exercise of the prophetic faculties—the day when a trip to Minneapolis and a postgraduate course at the University of Minnesota will be necessary, a vital part in the professional life of every Northwest doctor who wants to be considered 'up and coming' in his own home town."

Better Health for Americans

A committee was appointed by the American Public Health Association at its meeting in New York early in October, to bring about a better coordination and a long-time plan among all of the agencies interested in the health of the people.

The chairman of this committee is Dr. A. T. McCormack of Louisville, Kentucky's State Health Commissioner and new president of the public health association.

The objective is better health for the American people. The means will not include any stimulation to socialization of American medical services judging by the excerpt, printed below, from Doctor McCormack's address to the association given at the Pennsylvania Hotel, New York City, October 7.

Theme: The Indigent

Incidentally, the theme of this year's meeting was the improvement, in general, of the health of the indigent population. Physicians who attended, including Dr. Max Seham of Minneapolis who reported upon the meeting for the *Minneapolis Journal*, were impressed and even amazed by the number of non-medical experts in various phases of public health education, who participated.

There are specialists in health education in the primary and secondary schools and other experts in the field of normal schools. There are psychologists, nutritionists, child hygienists and a host of others, all of whom must remain under the direction and control of the medical profession, according to Doctor McCormack.

Said Doctor McCormack:

"What shall we do about medical service for those who are ill? I would urge that we make it our first objective to do well what has already been assigned to us by the common consent of all the people, with the approval of the medical profession, in the public health field. We should oppose, at all hazards, the socialization of medicine. We should give every assistance to those of our profession engaged in the practice of curative medicine in the solution of their problem of medical care of the indigent. The medical profession of America has proudly carried on the traditions which have been handed down from leader to leader since the days of Hippocrates. Sometimes the banner of science has seemed to be beyond the horizon of those who most need its encouragement, but it has always been found again and borne aloft by succeeding generations of those who have given this great service to mankind. Every other progressive agency has helped to promote and improve civilization, but no other can claim to be or be acclaimed as a more faithful servant of mankind. Be assured that the American Medical Association, its autonomous constituent State Associations and component county societies are fully alive to their responsibility. Be not impatient with their progress. Prod and threaten them a little, if you will. Remember that they have always lived up to their responsibility to the people of this country and they always will. It is perfectly obvious that so great a service organization would, if it could be assimilated and controlled by any one of the social groups that would put their unhallowed hands upon it, be a conquest whose value would be beyond computation. But let these groups beware, because should they win such a costly war, it would become a Pyrrhic victory. The finer qualities that now characterize the physician would soon disappear in the routine of the official. As for the public health group in the medical profession, it behooves us to remember with pride the research, the achievements, the service, the lives of those who made all our knowledge possible. And we should recall constantly to ourselves, to our brethren and to all the world that we are physicians, doctors of medicine, proud of our calling, ready to modify our plans and our methods whenever better ones can be devised. So long as we do this, we may look forward to the future unafraid."

—*Minneapolis Journal*,
September 29, 1937.

OF GENERAL INTEREST

Dr. James R. Deagen of Saint Paul, has opened an office in Cold Spring for the practice of Medicine.

Dr. Martin Henry of Saint Paul, has opened offices in Stewartville for the practice of medicine.

Dr. L. H. Bussen of Freeport, has been appointed physician for the CCC camp at Walker.

Dr. J. P. Nesselrod, of Rochester, has moved to Evanston, Illinois, where he will practice medicine.

Dr. A. A. Giroux, of Duluth, is opening an office at Red Lake Falls for the practice of medicine.

Dr. Warren Fetterly of Minneapolis, has joined the Malmstrom-Sarff clinic at Virginia.

Dr. Henry E. Binet of Grand Rapids, has been elected a Fellow of the American College of Surgeons.

Dr. Alden Risser of Stewartville was married October 9, to Miss Marion Evans of Minneapolis.

Dr. John Simons, of Swanville, recently moved to Whitefish, Montana, where he will engage in the practice of medicine.

Dr. Herman J. Kooiker of Hill City, has moved to Hull, Iowa, where he will engage in the practice of medicine.

Dr. Robert N. Barr and Dr. Lucy Heathman of Minneapolis, were united in marriage on September 26, at the Presbyterian Church in Elbow Lake. Reverend R. L. Barr, father of the bridegroom, officiated.

Dr. C. G. Arvidson of Minneapolis, consulting physician at Minnesota penal institutions, appeared on the program of the American Prison Conference at Philadelphia early in October.

Dr. R. D. Mussey of Rochester is the new president of the Central Association of Obstetricians and Gynecologists, having been installed at the meeting held in Dallas, Texas, in October.

Dr. Estelle A. Mageira, formerly on the staff of the State Hospital, Rochester, Minnesota, is now associated with the Mississippi State Hospital, Whitfield, Mississippi.

Dr. Stuart D. Whetstone, formerly of Cutbank, Montana, has opened an office in Winona for the practice of general medicine. Dr. Whetstone is a graduate of the University of Minnesota, with two years of post graduate work at King's County Hospital, Brooklyn, N. Y.

Dr. Leo T. Samuels has been appointed Assistant Professor of Physiologic Chemistry at the University of Minnesota Medical School, coming from the University of Southern California where he held an instructorship in the Department of Pharmacology.

Dr. Edward Burch has become associated in practice with his father, Dr. Frank E. Burch, in St. Paul. Following graduation from Johns Hopkins Medical School, in 1933, Dr. Burch has been a resident in the eye department at the Johns Hopkins Hospital.

At the regular monthly meeting of the Washington County Medical Society, September 14, Dr. H. Peterson, of the University Hospital, gave an illustrated lecture on "Intervertebral Dist" which was greatly enjoyed by the members present.

Dr. Wesley W. Spink has been appointed Assistant Professor of Medicine at the University of Minnesota Medical School. He formerly held an appointment in Medicine at Harvard University Medical School and was Resident Physician at the Thorndike Memorial Laboratory.

Dr. Burtrum C. Schiele has been appointed Assistant Professor in the Division of Nervous and Mental Diseases, Department of Medicine, University of Minnesota, coming from the Payne Whitney Clinic and the Cornell University Medical School where he held an instructorship in Psychiatry.

Dr. C. E. Henry of Minneapolis has been advanced from the rank of commander to that of captain of the naval reserve medical corps. This rank is held by only four men in the country, and is next in line to that of rear admiral. Dr. Henry is the state's senior naval medical reserve officer.

Dr. W. P. Ross of Worthington, has been appointed superintendent of the Otter Tail County Sanitarium, succeeding Dr. W. S. Broker of Battle Lake, who has accepted the superintendency of the Wadena-Todd County Sanitarium at Wadena. Dr. Ross was formerly assistant superintendent of the Southwestern Minnesota Sanitarium at Worthington.

"The Therapeutic Problem in Bowel Obstruction," a book in monograph form by Dr. Owen H. Wangenstein, Professor and Head of the Department of Surgery, University of Minnesota, has just been released by the Charles C. Thomas Company. This publication is the essay for which Dr. Wangenstein was awarded the Samuel D. Gross Prize in 1936.

Miss Margaret Arnstein, who held an appointment as Consultant Nurse, Division of Communicable Dis-

eases, New York State Department of Health, has been appointed Assistant Professor of Preventive Medicine and Public Health and Supervisor of Public Health Nursing at the University of Minnesota, to succeed Miss Eula Butzerin who has accepted a similar appointment at the University of Chicago.

Dr. Ancel Keys has been transferred from the Department of Physiologic Chemistry in the Mayo Foundation of the University of Minnesota Graduate School to an associate professorship in the Department of Physiology of the Medical School. Dr. Keys will develop a teaching and research program in physiology and school health for students majoring in Physical Education. This program will provide an opportunity for graduate work in these fields and for research in the physiology of normal activity.

The Pan American Medical Association will conduct a cruise to the West Indies on the S. S. Queen of Bermuda, leaving New York January 15, 1938, and returning January 31, 1938. The Hotel National at Havana will serve as headquarters for scientific sessions during the five day stay in that city. The other ports to be visited will be Port-au-Prince, Haiti, Trujillo City, Santo Domingo, and San Juan, Puerto Rico. Further information may be obtained from the Pan American Medical Association, 745 Fifth Avenue, New York City.

Gorgas Memorial Essay Contest

The ninth Gorgas Memorial Essay Contest open to third and fourth year high school students, will close January 21, 1938. This year's subject is "The Achievements of William Crawford Gorgas and Their Relation to Our Health." For the best essay written in each high school a bronze Gorgas Medal is awarded and the winning student represents his high school in the state competition. A prize of \$10.00 in cash is given for the best essay in each state, and from state winners the national awards are given. First prize, \$500.00 in cash and a trip to Washington to receive the prize; second prize, \$150.00; and third prize, \$50.00. Full information may be obtained from the Gorgas Memorial Institute at Washington.

Graduate Course in Venereal Disease Control

Graduate courses for training in the various phases of venereal disease control have been instituted by Western Reserve University, Cleveland, Ohio, under authority of the United States Public Health Service and the Ohio State Director of Health. They will be open without fees to health officers and to physicians coöperating with state and local health departments in the states of Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, North Dakota and South Dakota, but the number who can be admitted is limited. The course may be entered at any time when a vacancy exists, usually for a duration of three or four months or longer. Visitors may also be admitted for shorter periods, if they can be accommodated.

Physicians who desire to take these courses should apply through their State Health Department to the Ohio State Director of Health. Application blanks, if not already at hand, can be obtained by addressing Dr. C. C. Applewhite, Regional Consultant for the United States Public Health Service, Room 314, U. S. Court House, Chicago, Illinois.

Henry Kendall Mulford

Death claimed Henry Kendall Mulford, founder of the pharmaceutical house bearing his name, on October 15, 1937. Beginning his life work as a pharmacist in Philadelphia at the age of twenty-one, Mr. Mulford established the Mulford Company in 1890 and was the first to manufacture diphtheria antitoxin in this country. Associating himself with well-known medical men in Philadelphia, he believed in the highest standards of manufacture of biological products and continuously worked to that end. In 1928 he became Director of Research and Biological Laboratories of the National Drug Company. Mr. Mulford received the degree of Master of Science from Lafayette College in 1918 and the highest degree possible, Master of Pharmacy, from his alma mater, the Philadelphia College of Pharmacy and Science, in 1933. Active till the last, his integrity and industry served as an example to those with whom he came in contact.

Christmas Seal Dinner

Dr. Morris Fishbein of Chicago, editor of the *Journal of the American Medical Association*, will be the principal speaker at the Christmas Seal dinner to be held Friday evening, November 12, at 6:30 p. m. at the Nicollet Hotel, Minneapolis, in connection with the annual meeting of the Minnesota Public Health Association. His subject will be: "Tuberculosis among the Men of Death."

Dr. O. J. Hagen, president of the State Association, will give his presidential address and welcome will be extended by Dr. Stephen H. Baxter, first vice president of the Hennepin County Tuberculosis Association, which is local host to the meeting.

Entertainment features will include selections by the Brainerd High School A Capella Choir, and the playing of Swiss bells by J. H. Auld of Minneapolis. The bell-ringer theme of the 1937 Christmas Seal design will be carried out in decorations and entertainment features.

The dinner, which will launch the thirty-first annual sale of Christmas Seals, will climax an all-day meeting, including business sessions and a luncheon meeting to be held in Saint Paul. A demonstration of the Mantoux tuberculin test by Dr. E. K. Geer of Saint Paul will be a feature of the noonday meeting.

Forty-five health and civic state and local organizations are co-operating in arrangements for the meeting. Physicians, nurses, County-Public Health Association and Christmas Seal workers from all parts of the state are expected to attend the meeting. Dr. E. A. Meyerding, executive secretary, is in charge of arrangements.

REPORTS and ANNOUNCEMENTS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next examinations (written and review of case histories) for Group B candidates will be held in various cities of the United States and Canada on Saturday, November 6, 1937, and Saturday, February 5, 1938. Application for admission to these examinations must be filed on an official application form in the office of the secretary at least sixty days prior to these dates.

The general oral, clinical and pathological examinations for all candidates, (Groups A and B) will be conducted by the entire Board, meeting in San Francisco, California, on June 13, and 14, 1938, immediately prior to the meeting of the American Medical Association.

Application for admission to Group A examinations must be on file in the secretary's office before April 1, 1938.

For further information and application blanks, address Dr. Paul Titus, secretary, 1015 Highland Building, Pittsburgh, (6), Pa.

HOMEcoming CLINIC PROGRAM

On Friday, November 12, in the University Hospital amphitheater, clinics will be given by the following men for the Minnesota Medical Alumni Association:

8:30- 9:00—Dr. Henry Michelson, Professor of Dermatology
9:00- 9:30—Dr. Cecil Watson, Associate Professor of Medicine
9:30-10:00—Dr. O. S. Wyatt, Assistant Professor of Surgery
10:00-10:30—Dr. Jennings C. Litzenberg, Professor of Obstetrics and Gynecology
10:30-11:00—Dr. Irvine McQuarrie, Professor of Pediatrics
11:00-11:30—Dr. Owen Wangensteen, Professor of Surgery
11:30-12:00—Dr. Wallace Cole, Professor of Surgery, Department of Orthopedics

Following these clinics guests will be entertained at luncheon by the University Hospital.

All doctors and friends are invited.

SAINT LOUIS COUNTY MEDICAL SOCIETY

The regular meeting of the Saint Louis County Medical Society was held at St. Luke's Hospital in Duluth, on October 14.

Dr. J. Lawrence McLeod of Grand Rapids was the principal, the subject of his address being "Medical Economics."

PARK REGION MEDICAL SOCIETY

The regular October meeting of the Park Region Medical Society was held in Fergus Falls, October 13, preceded by a banquet for the physicians and their

wives. Following the banquet members of the Auxiliary adjourned to the home of Dr. and Mrs. W. L. Burnap to spend the evening.

The speaker of the evening was Dr. Martin Nordland of Minneapolis. His address was devoted to a discussion of the different phases of goiter.

WABASHA COUNTY MEDICAL SOCIETY

There were thirty-six in attendance, including doctors and their wives, at the sixty-ninth annual meeting of the Wabasha County Medical Society, held at Kellogg, Minn., Thursday, October 7, 1937.

Members of the society, ladies and other guests were entertained by Dr. D. P. Dempsey of Kellogg.

The scientific program was carried out as given in the October issue of MINNESOTA MEDICINE, excepting that the talk on "Medical Treatment of Diseases of the Gallbladder" was given by Dr. H. R. Butt of the Mayo Clinic instead of Dr. J. F. Weir who was unable to be present.

The following officers were elected for the coming year: President, Dr. H. T. Sherman, Plainview; vice president, Dr. B. J. Bouquet, Wabasha; secretary-treasurer, Dr. W. F. Wilson, Lake City; delegate to State Association, Dr. W. J. Cochrane, Lake City; alternate, Dr. C. G. Ochsner, Wabasha; censor for three years, Dr. B. A. Flesche, Lake City. Censors holding over are Dr. C. G. Ochsner, Wabasha, and Dr. J. A. Slocumb, Plainview.

Mrs. J. F. Norman, president, and Mrs. W. B. Roberts, organizer of the Women's Auxiliary of the Minnesota State Medical Association, were present at the meeting, and a Woman's Auxiliary for Wabasha County was organized, with the following officers elected: President, Mrs. B. A. Flesche, Lake City; vice president, Mrs. J. A. Slocumb, Plainview; secretary, Mrs. G. W. Holt, Wabasha; treasurer, Mrs. D. A. Burlingame, Mazeppa.

MINNESOTA STATE MEDICAL OFFICERS ASSOCIATION

The regular meeting of the Minnesota State Medical Officers Association was held at the Willmar State Hospital on Tuesday, October 26. A symposium on Encephalography was presented by Dr. Grimes, Dr. Peterson and Dr. Nisson of St. Peter State Hospital. Dr. C. O. Estrem of Fergus Falls presented a paper on "The Fallopian Tube." Dr. Walter P. Gardner presented a paper on "The Importance and Benefit of a Library in a Psychiatric Hospital." Dr. Magnus Peterson of Willmar presented his findings in reference to "Cysternal Punctures with Special Reference to the Aged."

BOOK REVIEW

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

THE THERAPEUTIC PROBLEM IN BOWEL OBSTRUCTIONS. Owen H. Wangenstein, B.A., M.D. Ph.D., Professor of Surgery of the University of Minnesota and Surgeon-in-Chief of the University of Minnesota Hospital. 360 pages. Illus. Price, \$6.00. Springfield, Illinois, and Baltimore, Maryland: Charles C. Thomas, 1937.

This book of 360 pages is divided into three parts, the first of which, covering ninety-three pages, is the essay for which the author was awarded the Samuel D. Gross Prize for 1935 by the Philadelphia Academy of Surgery and is now being published to comply with the stipulations of the award. By permission of the trustees of the award the author has been permitted to amplify his original contribution by the addition of two sections, the first of which deals with General Considerations of Diagnosis and Treatment in Bowel Obstruction, covering 74 pages, and a final section of 191 pages devoted to The Special Obstructions in which the fifteen major classifications of obstruction are given detailed analysis from every standpoint.

The author is a strong protagonist of the idea that the mechanical elements which enter into the causation of and result from the presence of intestinal obstruction are much more important factors in the production of death than is the traditional toxin absorption of the older school of surgery. While, he says, there is much yet to learn concerning the bodily upsets and disturbances which accompany obstruction of the bowel he feels that a better understanding of the underlying mechanics of the condition and a saner application of appropriate therapy based thereon have brought about a definite enough lowering of the mortality to support his contention. It is around this hypothesis that the whole book is centered and the author has spared no pains to lay an adequate foundation for his reasoning. The first chapter contains evidence of much painstaking research in the experimental laboratory, covering the effects of distension and the results of decompression, in which the author acknowledges the valued cooperation of his junior colleagues, Scott, Sperling, Hibberd, Paine and Rea, successively research assistants during the years 1931 to 1935. Then comes a brief but highly valuable chapter on the recognition of bowel obstruction, followed by an equally good one on its treatment, in which the author stresses, but not unduly so, his well-known views on decompression by suction. This, with a short summarizing, completes the prize essay portion of the book and contains fifteen illustrations, most of which are from x-ray films by Leo Rigler, with a few reproductions of typical charts. The remaining three quarters of the book goes more fully into the

clinical considerations, with 75 well chosen illustrations from the same x-ray source, drawings by Miss Hirsch and half tones from photographs.

Throughout this book the author has adhered closely to his theme and has furnished a monograph of such merit that it will be greatly welcomed by surgeons everywhere. Bowel obstruction, from whatever cause, has always been the bugbear of surgical practice and the management of it, until now, has been one of the few fields in the domain of abdominal surgery in which very little advance has been made. We believe that Dr. Wangenstein is entitled to great credit for his efforts, as set forth in this book, in the following major premises:

1. Emphasizing the mortality of treatment itself as ordinarily carried out in the past;
2. The negation of the so-called "acute abdomen" as an indication, per se, for operative intervention;
3. The recognition of the mechanical factor in causing fatal dysfunction, as opposed to the older hypothesis of toxic absorption.
4. Establishing the value of the auscultatory signs in connection with paroxysmal pain, fortified by the x-ray findings, in early diagnosis of the presence of obstruction.
5. Standardizing on a practical basis the principles of conservative decompression in prevention and treatment.

GILBERT COTTAM, M.D.

CLASSIFIED ADVERTISING

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MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society.

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PHYSIOLOGIC MECHANISMS IN RELATION TO THE DEVELOPMENT OF PEPTIC ULCER*

FRANK C. MANN, M.D.

Rochester, Minnesota

IN many pathologic conditions anatomic and physiologic characteristics determine the site, process of development, character and extent of the lesion. This statement appears to be especially pertinent in regard to the experimentally produced lesion, peptic ulcer. In this brief review of the results of experimental investigations on peptic ulcer I wish to present the more significant facts concerning the anatomic and physiologic basis for the characteristic development of the experimentally produced ulcer together with a description of the processes of formation and healing of the lesion.

Some of the factors which have been proven of significance in the experimentally produced lesion could also be present in the spontaneously occurring peptic ulcer of man, but owing to the fact that other circumstances differ, exact comparisons between the two conditions will be justified only when knowledge of both has been considerably enhanced. No attempt will be made to correlate the facts that have been learned about peptic ulcer from experimental studies with those that are known from clinical studies of the condition in man, as I believe that attempts to apply the experimental data to the clinical condition should be made by the clinician possessing a thorough knowledge of the life history of the lesion in the human.

Physiologic Mechanisms of the Digestive Tract

In order to evaluate the anatomic and physiologic factors that are significant in the development of the experimentally produced ulcer, the

gastro-intestinal tract should be considered a complete organ. The digestive mechanism phylogenically has been efficiently adapted to the biologic environment of the species. The single-celled organism engulfs its food and digests it within itself with its own intercellular enzymes. From this simple digestive mechanism of the single-celled organism, there are many gradations until the higher organism, man, is reached, in which case the digestive process occurs in a tube composed of several highly specialized portions contained in the body cavity. The changes in the digestive mechanism are adapted to such biologic environmental factors as the character of the food, the method of procuring food, and especially to the need for permitting the organism to do other things than take care of the food supply to the body. To this end the gastro-intestinal tract of man has been developed to function, as Meek has expressed it so well, "to receive, to store, to propel and to expel ingesta and during transit so to manipulate them mechanically and to alter them chemically that digestion will permit of absorption of wholesome products." In addition, these processes occur so that, with the exception of taking food and expelling ejecta, the normal individual is entirely unaware of them.

The functioning of the normal digestive tract is an excellent example of a coördinated mechanism. From the time the crude food materials are taken into the mouth until the ejecta are expelled from the body, the processes of muscular contraction and relaxation, secretion of the various digestive juices, both in the gastro-intestinal tract itself and from the accessory digestive organs, and the absorption of the final products of digestion, are beautifully timed so that the ingested food moves along the digestive tube at

*From the Division of Experimental Medicine, The Mayo Foundation, Rochester, Minnesota. Presented in a Symposium on Peptic Ulcer before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 3, 1937.

just the proper speed for trituration and mixing with the enzymes which are poured out at the correct time in a medium with exactly the proper chemical reaction to permit the disintegration of the ingesta chemically into substances which not only can be absorbed into the blood and lymph, but which are also innocuous to the body and capable of being metabolized. I will review briefly the pertinent facts concerning the mechanism of the upper portion of the gastro-intestinal tract which appear to be of significance in ulcer.

The process of digestion begins with the secretion of saliva and trituration of the food in the mouth. When the bolus of food is passed into the esophagus, voluntary control over it ceases and does not again occur until the indigestible portion is ejected. The main functions of the stomach are: (1) to store ingesta, (2) to permit salivary digestion to proceed for a longer period of time, (3) to secrete an enzyme for coagulating certain foods, such as milk, in the stomach of the young and thus by making it more difficult for such food to leave the stomach give opportunity for gastric digestion to occur, and (4) to secrete hydrochloric acid and pepsin which furnishes one of the two important mechanisms for digesting protein.

Ingesta, upon entering the stomach, pass over the shortest route and the path of least resistance, which is along the lesser curvature, toward the pylorus. If the entering material is fluid, it passes through the pylorus within a short period of time. If the food is composed of solid material, passage into the duodenum awaits the development of pressure within the stomach produced by muscular contraction and relaxation of the pyloric mechanism. The movements of the stomach have three functions; (1) trituration of the contained food materials, (2) mixing the food with gastric secretion, and (3) expelling the food from the viscus. The movements of the stomach are quite complex, and suffice it to state here that they are weak and shallow in the fundic wall, where they tend simply to adapt the size of the stomach to the amount of contained material, and are strong and vigorous in the pyloric region, where they sweep the gastric content into the duodenum.

The mechanism permitting the food to pass into the pylorus is not thoroughly understood. In this connection the pyloric sphincter should

not be considered as the only important factor in controlling the passage of gastric content into the duodenum, as the sphincter can be removed without greatly altering the emptying rate of the stomach, but the whole pyloric region is involved in the emptying of the stomach. While the theory of chemical control of the pyloric mechanism is generally discredited and the belief that the composition of the gastric content is more important in producing relaxation of the pyloric mechanism in order to permit passage of material from the stomach into the duodenum, an unprejudiced view, taking into consideration the proven facts, would indicate that several factors are responsible and no single factor is essential. The most important consideration to be emphasized is that the movements of the stomach are normally very orderly and change the ingesta into a suitable state and pass it into the duodenum at a suitable rate for the proper functioning of the intestine.

The normal movements of the duodenum are not fully understood. It is surprising to find how little exact knowledge can be obtained in regard to the movements of this portion of the intestinal tract. It can be demonstrated that powerful peristaltic movements can occur and that reverse peristalsis is a normal occurrence in the duodenum, but the character and extent of the motor activity of the duodenum during the passage of a normal meal have not been as carefully studied as in the remaining portion of the intestine. However, it would appear that the duodenum is capable of sweeping the gastric content that is expelled into it rapidly into the jejunum, or if not properly prepared, returning it to the stomach.

The secretory mechanisms of the gastro-intestinal tract are as carefully coördinated as the motor mechanisms and are even more important in regard to the formation of the peptic ulcer. The fundic mucosa secretes most of the gastric juice, including the two most important constituents, hydrochloric acid and pepsin. The pyloric mucosa secretes a small amount of a slightly alkaline fluid containing mucus and pepsin. The duodenal mucosa secretes mucus and several enzymes. The bile, with its three major constituents, bilirubin, cholesterol and bile salts, and the pancreatic juice, with its three important enzymes, inactive trypsin, amylase and

steapsin, are poured into the duodenum just beyond the pylorus.

The digestive enzymes can be divided into two groups in regard to the reaction of the medium for their optimal action. Pepsin requires a medium with an acid reaction, while all the other enzymes act in a neutral or slightly alkaline medium. It is obvious that there must be some region between the two in which the reaction of the content of the gastro-intestinal tract is changed from acid to alkaline. This region is the ulcer-bearing area, the region which forms the battleground for the chemical conflict between acid and alkali. Most of the acid which is secreted by the fundic mucosa is buffered or neutralized by the food. The acidity is further slightly diminished as the gastric content passes through the pyloric region of the stomach, although the reaction of the chyme in this region is usually acid. The main mechanism for transforming the reaction of the gastric content from acid to alkaline is encountered just beyond the pylorus. There are three main factors in this mechanism: (1) the bile which acts mainly as a diluent, (2) the pancreatic secretion which dilutes, buffers and neutralizes the acid, and (3) the duodenal secretion which acts similar to, but to a considerable degree less than, the pancreatic secretion. It should be noted that, normally, there are coördinating mechanisms which control this acid-alkali mechanism so carefully that the pH of the content of the intestine distal to the duodenum is acid for only very short intervals of time.

I should like to emphasize a few facts mentioned in this brief review of the physiologic mechanisms of the upper gastro-intestinal tract because they are pertinent to the theoretical considerations upon which the first operative procedures which were fruitful in producing peptic ulcer experimentally are based. It should be noted that, anatomically, the musculature of the pyloric region is exceedingly well developed and the peristaltic waves in this region are strong and vigorous, expelling the gastric material from the stomach with force. There is no doubt in the mind of anyone who has observed the rapid and vigorous peristaltic movements of the pyloric region, as compared to the remaining portion of the digestive tract in a visceral organism which is free from inhibitory control of the central nervous system, that the mucosa of this

region of the tract may be subjected to greater mechanical trauma than the mucosa elsewhere and that the duodenal mucosa adjacent to the pylorus may be subjected to gastric content expelled with great force. It should also be noted that the content of this region located on each side of the pyloric sphincter is subjected to very rapid changes of a fairly wide range in pH. While, normally, the time during which the mucosa is exposed to an acid medium is relatively short, an injury to the acid-reducing mechanism may greatly prolong the period of exposure.

It should be recalled that, anatomically, the fundic mucosa which secretes the acid is very loose, in order to accommodate the varying size of the stomach, and thus forms folds which protect an injured surface from the gastric content which passes over it, permitting healing. On the other hand, the pyloric mucosa is stretched tightly in some areas, especially at the lesser curvature, so that an injured area is always exposed. Furthermore, the lesser curvature is more or less stationary at the pyloric region, so that all the material that leaves the stomach is forced to pass over one small area.

Methods of Producing Chronic Peptic Ulcer Experimentally

Several successful methods have been developed for producing peptic ulcer experimentally. Recently it has been found that peptic ulcer, mainly gastric and rarely duodenal, follows the administration of large doses of cinchophen. These ulcers are similar to the lesion found in man in regard to location and gross and microscopic appearance. While the complete life history of the ulcers which follow the administration of cinchophen has not been learned, in general, with the exception that they occur mainly in the pyloric mucosa, it appears to be the same as that of the ulcers produced by the methods to be described later. Studies of the ulcer which follows the administration of cinchophen give promise of being very valuable because the ulcerations occur in the gastric mucosa and are associated with an initial gastritis which also appears to occur in the patient with ulcer.

Most of the facts that have been learned about the experimentally produced ulcer were obtained by studies of the lesion which follows certain methods of interrupting the coördinated mechanism of the gastro-intestinal tract previously de-

scribed. It has been found that if the acid-alkali balance at the pylorus is broken, that is, if the acid gastric content is caused to be expelled into a loop of intestine that does not have the protection of the alkalizing mechanism, a chronic peptic ulcer will develop in the intestinal mucosa at the site where the gastric content impinges. This condition can be brought about by many different types of operative procedure. The ulcer can be caused to develop in the duodenum, jejunum or ileum. It can be produced in either the functioning intestinal tract or in an isolated loop from any portion of the tract anastomosed to the stomach or a fundic pouch. The facts I shall cite in regard to ulcer have been learned by experimental investigations employing the operative methods of producing the lesion.

General Characteristics of the Experimentally Produced Ulcer

The ulcer is grossly and microscopically similar to the lesion as seen in man. The site of formation of the lesion is very constant. These ulcers always are found just distal to the point of emergence and in the direct pathway of the gastric content. Usually only one ulcer occurs, but sometimes a contact ulcer is present and rarely three ulcers are found. The ulcer usually develops rapidly, and from the time of the first visible signs of mucosal injury to the time a well-formed lesion has developed may be but a day or so. The base of the ulcer is usually markedly indurated. After being fully formed the lesion will persist for months unchanged. The ulcer will heal very rapidly if fully protected from contact with the gastric content. It will also heal slowly if partially protected from contact with the gastric content.

The Life History of the Experimentally Produced Ulcer

The development of successful methods for the experimental production of chronic peptic ulcer has made possible the study of the complete life history of the lesion. Only a brief description of the processes of development and healing of the ulcer can be given here. The ulcer has been observed through the various stages of its development from the time it could just be recognized as a pathologic process up to several months after it had the characteristic ap-

pearance of the chronic lesion. Then, in turn, the healing process of the chronic lesion has been observed in detail until restoration was so complete it was impossible to recognize grossly that an ulcer had existed.

The ulcerating process always begins at the surface of the mucosa. At first, all that can be seen is an oval or circular area covered with a homogenous gray membrane. Microscopic examination of the lesion at this stage shows that this membrane is very thin, involving only the surface cells, and that it is composed of mucosal cells in various stages of necrosis, leukocytes and erythrocytes. With the exception of small areas of hemorrhage between the tubules just beneath the membrane, the rest of the tissue appears normal. If the membranous layer is gently sponged and rubbed off, a slight depression is uncovered where the surface of the mucosa has disappeared and which bleeds profusely. This formation of gray membrane composed of cell debris is constantly occurring and the surface of the membrane which is older and consists of the more severely injured cells is constantly being eroded by the gastric content passing over it. The ulcer is saucer-shaped until the muscularis is reached. The muscularis is at first penetrated by the pathologic process to a slightly greater extent peripherally than the mucosa, undermining the latter and causing the characteristic punched-out appearance of the fully developed lesion. In association with penetration of the mucosa, infiltration of leukocytes, and proliferation of fibroblasts and mucosal cells, occurs at the periphery of the injured area. Shortly after the ulcerating process has started, bacteria in varying numbers can be found at the periphery of the lesion and the amount of fibroblastic proliferation appears to depend to a considerable extent upon the degree of secondary infection.

While it has been necessary to describe the development of the ulcer by stages, it really is a continuous process, the essential features of which are identical in all lesions. This same statement also applies to the process of healing of the ulcer. As a matter of fact, the healing process occurs concomitantly with the developing process, but the lesion does not heal unless it has been partially or completely protected from the gastric content or, if the ulcer follows the administration of cinchophen, withdrawal of the drug. In the unprotected ulcer, the delicate grow-

ing edge of granulation tissue, covered with a single layer of mucosal cells, which is the initial stage of the healing process, is injured and swept away by the gastric content as soon as it has progressed beyond the protecting edge of the periphery of the lesion.

Within just a few hours after the ulcer has been protected from gastric content flowing over it, the base of the ulcer is covered with a thin fibrinous membrane, the leukocytes and bacteria begin to disappear beneath this protection, and the growing granulation tissue and mucosa are able to advance from the periphery over this membrane covering the base. The granulation tissue grows faster than the mucosa, and eventually fills the whole ulcer and usually extends over the edge of the lesion. Concomitant with the proliferation of the granulation tissue, the periphery of the lesion moves inward, becoming greatly shortened.

The growing edge of mucosa consists of a single-celled layer of flat cells, which are not at first attached to the supporting granulation tissue. While proliferation of the mucosal cells appears to occur throughout the growing surface, it is fastest at the periphery of the ulcer, so that the advancing edge of mucosa seems to be pushed over the surface of granulation tissue. Sufficient pressure is soon developed in this most rapidly proliferating area so that simple folds of mucosa appear adjacent to the normal mucosa at the periphery of the ulcer. The first fold at the growing edge of the ulcer and nearest the center of the lesion usually has an elongated slope on the side of the advancing edge that is very characteristic. As previously stated, the growing edge of granulation tissue usually overflows the sides of the ulcer, giving a mushroom appearance. When the growing edge of mucosa which is protected by overhanging granulation tissue reaches the stalk of this mushroom, it passes upward and may cover the whole surface of the granulation tissue, even that portion which is beyond the edge of the ulcer. Eventually, however, the stalk of the mushroom of granulation tissue is squeezed off with its covering of mucosa and is discarded, leaving the whole surface of the lesion covered with the mucosa which has been developing under the protection of the granulation tissue. When the granulation tissue has filled the base of the ulcer completely, the lesion can be recognized by the raised, pearly white

appearance of the newly formed tissue. The healing tissue is very delicate at this stage and can be washed out by dropping water upon it with a medicine dropper, leaving the appearance of the ulcer almost identical with that before the lesion was protected. The whole healing process occurs in a very orderly fashion and, when completed, the site of the ulcer, as has been said, usually cannot be distinguished grossly. Microscopically, the site of the lesion can be recognized because the restored surface of the mucosa is thinner than normal, contains atypical villi and, since smooth muscle does not regenerate, the mucosa over the ulcerated area rests on a connective tissue base instead of the muscularis mucosæ.

Important Facts that Have Been Learned from Studies of Experimentally Produced Ulcer

Lack of space permits but brief statements of the facts that have been learned from experimental studies of ulcer. These statements, unless qualified otherwise, apply specifically to ulcers that have been produced by interruption of the acid-alkali mechanism at the pylorus:

1. Ulcer rarely follows diversion of bile from the duodenum, but acute ulcers are frequently found in the condition of jaundice following obstruction of biliary outflow.

2. Acute duodenal ulceration frequently follows the complete loss of pancreatic secretion from the body, but rarely occurs if secretion of the pancreas is prevented by obstruction to the outflow of pancreatic juice.

3. Ulcer occurs in a small percentage of instances in which the duodenum is removed.

4. Ulcer frequently occurs in the duodenum if the bile and pancreatic ducts are drained into the terminal ileum.

5. Drainage of the entire duodenal content into the terminal ileum causes ulcer to form in almost every instance in the jejunum or ileum which has been placed in the position previously occupied by the duodenum.

6. The site at which the ulcer develops is so remarkably constant that it is possible at operation to indicate accurately where the ulcer will form.

7. By changing the angle of the loop of gut anastomosed to the stomach it is possible to change the site where the ulcer will occur and to indicate this area at the time of operation.

8. Varying the size of the opening through which the gastric content is expelled changes the rate at which the ulcer forms. The ulcer occurs more rapidly with the smaller opening.

9. Injury to the motor mechanism of the stomach, such as making an hour-glass stomach, delays but does not prevent the development of ulcer.

10. Resistance of the intestinal mucosa to ulcer decreases progressively from the pylorus to the colon.

11. The loop of intestine anastomosed to the stomach can be turned at different angles in relation to its blood supply without affecting the site at which the ulcer develops.

12. An incision can be made repeatedly within short intervals of time in the loop of intestine containing an ulcer opposite the lesion and the ulcer observed. The incision heals but the ulcer does not.

13. An ulcer will show evidence of healing within a few hours after it has been completely protected from contact with the gastric content.

14. An ulcer will heal slowly if the duodenal content is drained so it will pass over the lesion.

15. An ulcer will heal slowly following a gastro-enterostomy.

16. When an ulcer is made to heal by preventing the gastric content from passing over it, another ulcer usually develops in the efferent loop of intestine in the pathway of the gastric content of the gastro-enteric anastomosis made to drain the stomach. It should be noted that the site of the new ulcer was subjected to the same condition as the site of the original.

17. The healing process in an ulcer completely protected from gastric content is rapid, orderly, progressive and similar in the different lesions.

18. The healing process in an ulcer only partially protected from contact with the gastric content is irregular and slow, with many complications, such as reformation of a portion of the ulcer and hemorrhage.

19. During the healing process the newly formed tissue is very delicate and can be washed out of the ulcer with unbelievable ease.

20. Removal of all the fundic mucosa except a narrow tube for the passage of food greatly delays the formation of the ulcer but does not prevent its occurrence.

21. If an isolated fundic pouch is drained by

an isolated loop of intestine, ulcer will occur in the intestinal loop.

22. If an isolated pyloric pouch is drained by an isolated loop of intestine, ulcer does not occur.

23. Ulcer will occur after section of the nerves to the stomach.

24. A diet of coarse food will increase the rate at which an ulcer develops, while a liquid diet retards the rate of ulceration.

25. Patches of jejunum, transplanted into the wall of the fundic portion of the stomach, do not become ulcerated.

26. Patches of jejunum, transplanted into the lesser curvature of the pyloric portion of the stomach, frequently do become ulcerated.

27. Patches of the fundic region of stomach, transplanted into the wall of the jejunum or ileum, produce ulceration in the intestinal mucosa.

28. Areas from which the mucosa is excised heal more rapidly in the fundic region than in the ulcer-bearing area of the pyloric region.

29. All the major complications of ulcer, as noted in the human, have been observed in the experimentally produced lesion.

30. Finally, it should be emphasized that these experimentally produced ulcers cannot be distinguished grossly or microscopically from ulcer as seen in man.

This large amount of accumulated data indicates conclusively that chronic peptic ulcer can be produced experimentally by interrupting the chemical coördinating mechanism whereby the acid gastric content is diluted, buffered and neutralized as soon as it leaves the stomach. Ulcer occurs in a mucosa subjected to the action of the acid gastric content and unprotected by the acid-reducing mechanism. Ulcer does not occur in the absence of acid or in the presence of this mechanism for reducing acidity. The motor mechanism of the stomach is important in determining the site of the lesion, the ulcer occurring in the area on which the acid gastric content first impinges upon leaving the stomach and the rate of progress of the lesion, the ulcer forming more rapidly where the acid gastric content is expelled with greater force. The force with which the content of the stomach is expelled is modified by the size of the opening of emergence, being greater with the smaller opening.

Complications of Experimentally Produced Ulcer

As previously stated, all the complications of peptic ulcer as seen in man have been observed in the experimentally produced lesion. The more important complications are perforation of the lesion and hemorrhage from the ulcer.

Perforation of the ulcer.—A very high percentage of experimentally produced ulcers perforate. The perforation may occur very quickly, with resultant leakage of intestinal content and peritonitis. The perforation may pierce another viscus, such as the gallbladder, colon, or a loop of intestine. The perforation usually is closed by the surface of an adjacent organ or, especially, the omentum. In some instances the perforated ulcer shows one or two terraces, indicating that there has been more than one active onslaught in its creation. A few ulcers have even perforated through the abdominal wall, producing a fistula.

Hemorrhage from the ulcer.—Hemorrhage from the experimentally produced ulcer is a frequent occurrence and death of the animal from loss of blood at the site of the lesion is not uncommon. The hemorrhage occurs from one of two sources. Rarely, the pathologic process involves an artery, producing necrosis of the arterial wall with a resulting loss of blood. Usually, the bleeding occurs from an injured surface of the granulation tissue in a healing lesion. As previously described, in the healing process the base of the ulcer is filled with a very vascular granulation tissue. Injury to this newly formed vascular bed occurs very easily and may be followed by a hemorrhage of sufficient magnitude and continued for a long enough time often to cause death. The ulcers more prone to bleed are those healing under a condition of partial protection. For instance, if gastro-enterostomy is carried out on an animal with ulcer, thus diverting a portion of the gastric content from passing over the lesion, the ulcer will slowly heal. While the ulcer is in the process of healing the gastric content that does pass over the lesion frequently injures the delicate growing and developing

granulation tissue in the base and a hemorrhage often ensues. A coarse diet is more prone to cause bleeding than a liquid one. The fully protected healing ulcer, that is, a lesion from which gastric content is completely excluded, has never produced a demonstrable hemorrhage in our experiments.

Summary

Studies on the experimentally produced peptic ulcer have proven that the site, character, extent, processes of development and healing depend almost exclusively upon an anatomic and physiologic basis. The important factors in the development of the lesion are chemical and mechanical. The typical lesion occurs in a mucosa exposed to acid gastric content which is not protected by the mechanism for diluting, buffering and neutralizing the acidity of the gastric content. It never occurs in a mucosa not exposed to acid gastric content. The ulcer begins with injury and destruction chemically of the surface cells of the mucosa with which the acid gastric content comes in contact. The site of the ulcer is determined by the mechanical factor of expulsion of the gastric content, that is, it occurs in the area where the gastric content first strikes after emergence from the stomach. Progression of the lesion is due to the mechanical eroding away of succeeding layers of injured surface cells and chemical injury to the living cells previously protected by the dead cells above. Limitation of the lesion is determined by the area over which an effective degree of acidity for cellular injury can be maintained. Chronicity of the lesion is produced by the same two important factors producing the lesion, by destroying chemically and washing away mechanically the delicate newly formed proliferating cells as soon as the healing edge has progressed beyond the periphery of the ulcer. Healing of the lesion always occurs immediately after protecting it from the acid gastric content.

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X-RAY DIAGNOSIS OF ULCER*

R. W. MORSE, M.D.

Minneapolis, Minnesota

POSITIVE diagnosis of ulcer, whether of the stomach or duodenum, depends upon the demonstration of the crater plus the sclerotic area of induration or thickening of the gastric wall. Scar tissue in itself may be of importance, but does not lead to the positive diagnosis of open ulceration. Figure 1 shows an ulcer in the middle of the lesser curvature of the stomach, in which we have the crater (*A*) and then surrounding this the area of induration (*I*) which completely surrounds the crater or the hole in the wall of the stomach. The crater of the ulcer may vary considerably in size, and the area of induration with similar sized craters may also vary in size, but on the whole we find that in the benign ulcer, the crater of the ulcer is centric to the area of induration and there is a certain relation of the size of the ulcer to the size of the induration. These facts are fundamental and are true of peptic ulcer regardless of its situation.

Figure 2, (*A*) shows the ulcer-bearing area of the stomach and of the duodenum. In the stomach it follows the lesser curvature, running both onto the anterior and the posterior wall, from the cardia to the pylorus. In the first portion of the duodenum, however, the ulcer-bearing area is a ring-like area of the duodenal wall situated about one-quarter to one-half inch beyond the pyloric valve and about one-quarter or three-eighths of an inch in longitudinal length.

Figure 2 (*B*) illustrates the ulcer high up on the lesser curvature of the stomach, the area of induration in this instance extending from the cardia to an equal distance below the crater of the ulcer. Dashes represent the distribution of the area of induration. We have indicated, also in the dotted lines, the type of scar tissue, hour-glass contracture, which may develop with this type of ulcer. The contracted area at the pylorus is due to spasm of the pyloric canal. This type of spasm is frequently produced by ulcers higher up on the lesser curvature of the stomach.

Figure 2 (*C*) illustrates two ulcers. The upper

one is in the proximal part of the antrum and the crater is centric to the surrounding area of induration. When scar tissue forms here, as indicated by the dotted lines, it cuts across the stomach, forming an hour-glass contracture, and one can see that in comparison with *B*, in which gravity can help to drain the upper pouch, in *C* gravity does not help to drain the upper pouch. The second ulcer in Figure 2 (*C*) is directly in the pyloric valve and here the area of induration runs both into the wall of the cap or first portion of the duodenum and back into the stomach.



Fig. 1. Ulcer of lesser curvature (*A*) of body of the stomach. Area of induration (*I*). Cap (*C*) shows scar tissue deformity from ulcer.

Figure 2 (*D-1*) illustrates the ulcer in the distal part of the antrum or the pyloric canal. In contrast with the ulcer higher up on the lesser curvature, which very frequently may have associated spasm of the pyloric canal, those ulcers in the region of the pyloric canal do not usually produce this spasm. Ulcers in the pyloric canal usually heal without leading to fibrous stenosis. Figure 2 (*D-2*) shows the typical ulcer of the cap, the crater on the anterior surface, and the area of induration which extends throughout the wall of the cap. When the ulcer is close to the pyloric valve, the induration may extend back

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into the wall of the stomach. By the dotted lines, on the greater curvature side, we have indicated the hour-glass type of scar tissue contracture which very frequently accompanies this type of ulcer.

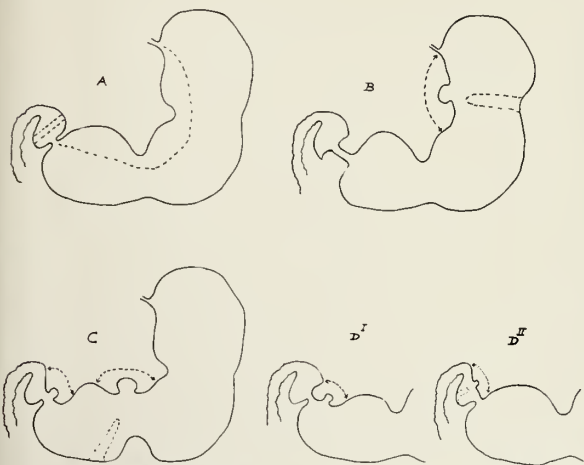


Fig. 2. *A*, Ulcer-bearing area of stomach and cap. *B*, *C*, and *D*, characteristic ulcers of stomach and cap with associated areas of induration and scar tissue contracture.

Diagnosis of ulcer of the cap is, on the whole, more difficult than diagnosis of ulcer of the stomach. In the stomach we can visualize the ulcer in profile; in the cap we have more difficulty visualizing the ulcer in profile, and also we have more difficulty in seeing the small ulcer.

Figure 3 (*A*) shows the area in which the ulcer usually occurs; then (*B*) the anterior wall ulcer and the area of induration; and (*C*) the posterior wall ulcer. Posterior wall ulcers do not usually have the associated hour-glass contracture. In *D* we have illustrated a point which we will come back to later, the visualization of the crater itself face-on rather than in profile in contrast with *B* and *C*. In *E* we have one of the scar tissue deformities, the so-called clover leaf, which is, as you see, the stage in which the ulcer may be healed, leaving as an aftermath narrow scar tissue bands which constrict the cap in a circular manner. In *F* we have the same type of deformity but with a longer circular constriction of the cap. In *G* we have the half-cap; in other words, an ulcer similar to *B* which is healed, leaving one half of the cap, the other half being obliterated by scar tissue formation. In judging the importance of the findings diagrammed in *H* we have one of the most difficult problems. We have indicated here both the profile of the cap in full and the bands of scar

tissue. These bands of scar tissue may be seen as a multiple lobulation of the cap similar to *E*, or we may see them only as radiating folds of mucosa, the outer wall margin of the cap not being deformed. In Figure 3 (*H*) we have indi-

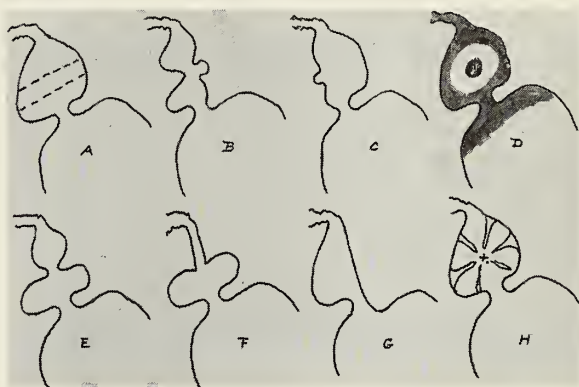


Fig. 3. *A*, Ulcer-bearing area of cap. *B-H*, characteristic deformities of the cap produced by ulcer.

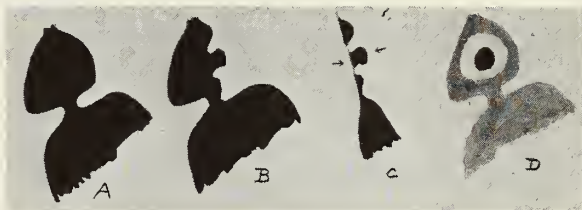


Fig. 4. Recently formed ulcer of the cap in which the crater is best demonstrated "en face" by use of pressure technic.

cated a small depression at the site of convergence of the radiating folds. It may represent an active ulcer or it may represent a depression which is covered with epithelium, a healed ulcer. If we do not see a crater or this depression at the center of convergence of bands of scar tissue, we are still unable to say that the ulcer is completely healed. In the deformed cap new defects may exist which we cannot visualize. For these reasons in the presence of scar tissue in the duodenum when the typical symptoms of ulcer are present, I think we must consider that active ulcer does exist, particularly when tenderness is present on pressure over the cap, even though we cannot visualize the crater.

As to the visualization of the crater, face-on in the duodenum, recently formed ulcers may not show in profile, the cap having a perfectly normal contour as shown in Figure 4 (*A*). Figure 4 (*B*) shows the deformity produced by the ulcer if we were able to visualize it in profile. In *C* we have diagrammed in profile the pressure

technic. This may be intentional or it may be accidental. Pressure is exerted in two directions against the ulcer so that the opposite walls of the cap come in apposition in the area of induration around the crater, blocking out the shadow

proximates the edges of the crater. Healing is also accomplished in part by granulation tissue which forms in the base of the ulcer, gradually filling the crater with connective tissue.

Figure 5 (*A*) illustrates the x-ray findings in



Fig. 5. *A*, Area of induration (dotted lines) before formation of ulcer crater. *B*, Crater of Ulcer (U^{II}). *C*, No residual deformity after healing of ulcer.

produced by the barium. As a result we have, as shown in Figure 4 (*D*), the crater showing as a bullet hole filled with barium, the area of induration showing no barium, and a faint rim of barium around the area of induration. This is a very common finding of ulcer in the duodenum, particularly when it is the first ulcer and has been present only a short period of time.

In order to explain in terms of gross pathology the unusual x-ray findings which are sometimes observed, particularly in ulcer of the stomach, it is necessary to understand the pathogenesis and life history of the ulcer as it is observed by x-ray examination.

We believe that these ulcers develop first as an area of necrosis in the wall of the gut, this area of necrosis being surrounded by an area of inflammation which thickens the wall. At this stage the only x-ray findings are a rigidity or lack of pliability of the wall and a slight indentation into the lumen of the gut by the thickening of the wall. Then this area of necrosis discharges its contents after rupture of the mucous membrane. During a certain stage the cleaning out of the crater of the ulcer is incomplete, and x-ray examination shows a hole extending from the lumen of the stomach, the margins of this hole being ragged and fissure-like. When the ulcer is characteristically formed, we have the smooth crater with a surrounding area of thickening and induration. Early in the life history of an ulcer the area of induration is made up of young connective tissue and is relatively soft or pliable. As healing goes on, this young connective tissue becomes old connective tissue or scar tissue and contracts so that it gradually cuts down the size of the crater and ap-

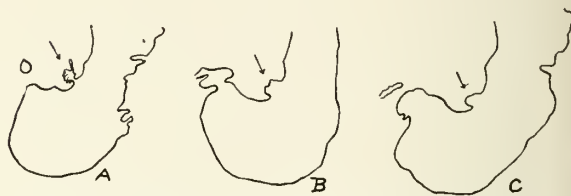


Fig. 6. Appearance of crater of gastric ulcer at successive stages in extrusion of necrotic core of the ulcer.

proximates the edges of the crater. Healing is also accomplished in part by granulation tissue which forms in the base of the ulcer, gradually filling the crater with connective tissue. Figure 5 (*A*) illustrates the x-ray findings in the stage before the ulcer crater has formed. In this case we found a small ulcer (U^I) in the pyloric canal, and the individual was put to bed under treatment. Subsequently the symptoms did not disappear and examination made a month later (*B*) shows a larger ulcer (U^{II}) in the lesser curvature wall of the body of the stomach, the other small ulcer being healed and leaving a small residual area of induration. This new ulcer went on progressively to healing (*C*). In other words, at the first examination we missed the area of protrusion into the lumen of the stomach. Figure 5 (*A*) (dotted lines) represents the area of induration preceding the actual discharge of the necrotic material from the core of the ulcer.

Figure 6 illustrates successive stages in extrusion of the necrotic core of the ulcer. In (*A*) the crater is ragged in outline, the barium extending into fissure-like crevices in its base. After one week (*B*) the necrotic material had been discharged except for a little debris in the bottom of the crater. After three weeks (*C*) we have the usual ulcer findings, the smooth crater of characteristic shape and the well-defined associated surrounding area of induration.

As healing of the ulcer proceeds, the crater of the ulcer gradually diminishes in size due to scar tissue contraction in the area of induration and granulation tissue which fills the crater with connective tissue. These two processes may proceed equally rapidly, in which case the crater becomes concentrically smaller until it finally disappears. Scar tissue contracts the neck of the ulcer more than the base so that the opening into the crater has a smaller diameter than the crater. When this characteristic finding is observed, one can tell from a single examination

that the ulcer is a healing ulcer. The two processes of healing sometimes do not proceed equally rapidly. When the granulation tissue forms rapidly, the crater may fill in and disappear without showing any constriction of the neck of the ulcer. When the granulation tissue



Fig. 7. *A*, Recently formed large gastric ulcer. *B*, The changes in shape of the crater of same ulcer due to slow healing.

forms slowly (slow healing of the ulcer—chronic ulcer), there is a proportionately more marked contracture of the neck of the ulcer, and a fairly large crater may communicate with the cavity of the stomach through a very narrow lumen. In the stomach, particularly, almost all ulcers tend to heal. The time period necessary for healing depends upon the original size of the ulcer and the treatment. Bands of scar tissue may produce narrow contractures which encircle the wall of the gut, producing the hour-glass deformity of the stomach and cap.

Figure 7 illustrates the changes in the crater of the ulcer which occur when healing is slow. In *A* there is a large ulcer of the lesser curvature high up in the body of the stomach. One can tell from its general appearance that it is a recently formed ulcer. The crater is unusually large. After several months we find the picture diagramed as shown in *B*; a smaller crater pinched off at its neck; in other words, a crater in which scar tissue contracture has been predominant in diminishing the size of the crater. In this instance the filling in of the crater with granulation tissue has been slow. This is a chronic ulcer and not a normally healing ulcer.

Figure 8 illustrates normal healing of an ulcer and the resultant change in the crater. *A* shows the ulcer with a large crater as it was first observed. Because of the slight constriction at the neck of the crater, one can tell that this is a healing ulcer and was originally larger. At the time of the first examination the patient was put to bed under medical treatment, and x-ray examinations were made at three to five day intervals. On the twentieth day the crater had become symmetrically smaller (*B*), and

there is more constriction of its neck. On the thirty-sixth day of healing the crater has become quite small (*C*), and eventually healed in sixty days.

The ulcers of the stomach which we have illustrated are deep; that is, they penetrate the



Fig. 8. The changes in shape of the crater of a gastric ulcer produced by normal healing.

muscularis propria of the stomach. Yet there is no perforation of the stomach into the peritoneal cavity. Most ulcers of the stomach are deep, but they usually do not perforate the stomach due to the fact that in the gastro-hepatic omentum there is a loose areolar connective tissue in which the protective inflammation can develop and protect against rupture into the peritoneal cavity. Ulcers in the stomach which develop posteriorly or anteriorly beyond or close to the reflexion of the gastro-hepatic omentum may perforate. In the duodenum, of course, ulcers rupture more frequently because they may occur at a site in which the peritoneum is firmly adherent to the outer muscle wall.

Minute ulcers or erosions produce small defects in the barium outline of the lumen of the stomach. Very frequently, these small ulcerations are multiple. From both the x-ray and the pathologic standpoint it is difficult to draw a line between erosion and true peptic ulcer. We have come to feel that these small minute lesions of the stomach (and duodenum) represent an ulceration of the mucosa in the presence of an inflammatory or degenerative process and are part of an ulcerative gastritis. The x-ray picture of the mucous membrane as a whole may be that of either a hypertrophic or atrophic gastritis.

The most important differential diagnosis is between peptic ulcer and carcinoma of the stomach. Our basis for the differential diagnosis of benign ulcer and carcinoma lies entirely in the form of the crater, the form of the surrounding area of induration, and the eccentric position of the crater in carcinoma as compared to the centric position of the crater in benign ulcer.

PEPTIC ULCER: MEDICAL MANAGEMENT

GEORGE B. EUSTERMAN, M.D.

Rochester, Minnesota

COMPETENT medical authorities have conservatively estimated that about 10 to 12 per cent of all individuals suffer at some time in their lives from a chronic gastric or duodenal ulcer, or both. Naturally, the medical profession always has been deeply concerned with the treatment of such a highly prevalent disease, affecting as it does the health, efficiency, and life of many adult members of every community. Obviously all individuals so affected do not come under the scrutiny of a physician because in many cases the symptoms are mild or permanently disappear after short periods of trouble. From combined clinical and postmortem observations it is known that some patients never present any tangible symptoms whatsoever.

To recount briefly certain observations bearing on diagnosis and treatment may not be amiss. Peptic ulcer is a disease of highly civilized people. When it does afflict persons of more primitive races it is usually attributable to nutritional or dietetic shortcomings, as has been pointed out by McCarrison and by Bergsma. The American negro, transplanted from his usual rural environment in the South, where he is comparatively immune to the disease, to the more intensive industrial milieu of the North, becomes increasingly susceptible to peptic ulcer, according to recent observations by Steigmann. This apparent environment influence has led to the belief in many quarters that ulcer is a psychosomatic disease; that is, it is largely of psychogenic origin. Ulcer afflicts men four times as frequently as it does women, and in our country at least duodenal ulcer is twelve times more frequent than gastric ulcer. As a matter of comparison, gastric carcinoma is three times more frequent than gastric ulcer. The post-operative recurrence of ulcer is eleven times as frequent among men as it is among women. The preponderance of duodenal over gastric ulcer, and the fact that the former is more refractory to treatment, generally speaking, has led many phy-

sicians to assume the mental attitude expressed thus: "Once an ulcer, always an ulcer." To a certain extent such a viewpoint is justifiable.

Correct Diagnosis

Effective treatment, among other things, presupposes correct diagnosis and proper choice of patients for the methods of treatment selected. Identification of the majority of both gastric and duodenal ulcers should be fairly easy in view of the characteristic syndrome. The combined effort of the internist and the experienced roentgenologist makes identification and localization of these lesions possible in 90 to 95 per cent of the cases, and in less skillful hands in at least 75 per cent. Conditions which most frequently simulate peptic ulcer and which must be excluded in the absence of roentgenologic confirmation of the presence of an ulcer, are functional or nervous gastric disorders, often characterized by antral spasm, pylorospasm, and hyperchlorhydria, the types of dyspepsia that may arise from the abuse of tobacco and irritating foods, chronic gastritis or duodenitis, alimentary allergy, hiatus hernia, cholecystic disease, and esophageal ulcer. Less likely are hypoglycemia and a bleeding ulcer in a Meckel's diverticulum. In doubtful cases observation in hospital often clarifies the diagnosis.

Proper Choice of Patients

As a rule, all patients who have uncomplicated ulcers, especially if the symptoms have been of short duration, and all younger individuals, should first have the benefit of adequate medical treatment. The same is true, in large measure concerning treatment of the more common uncomplicated lesions of older patients, especially if the manifestations are mild and infrequent, not progressive in severity, and do not interfere with the efficiency of the individual. Likewise, medical treatment usually is indicated for such lesions in the aged and in those who have serious, advanced, organic disease, such as active pulmonary tuberculosis, angina pectoris, diabetes mellitus, advanced chronic nephritis, marked obes-

*From the Division of Medicine, The Mayo Clinic, Rochester, Minnesota. Read in a Symposium on Peptic Ulcer before the eighty-fourth annual meeting of the Minnesota State Medical Society, St. Paul, Minnesota, May 3, 1937.

ity, and decompensating cardiac lesions. Moreover, treatment in the presence of pregnancy should be medical. The highly neurotic individual, whose complaints often are more the result of his psychoneurotic state than of his ulcer, and who infrequently obtains satisfactory results, should not be operated on, as a rule, although usually he is also difficult to treat medically. Many individuals who have late post-operative recurrence, not of formidable nature, are relieved successfully by nonsurgical measures. Then there are those who choose their own therapeutic procedure; that is, they refuse operation even though it may be definitely indicated, and there is no alternative but to carry out medical treatment and hope for the best. Close coöperation between internist and surgeon, manifestly more frequent now than it has been in the past, makes for more critical selection of patients for any particular form of treatment, as a consequence of which the results are uniformly better.

Methods of Medical Treatment

While clinical and experimental observations have fairly well established the mechanism by which ulcer is produced, the ultimate cause of ulcer still is unknown. As a result, treatment is in a sense empirical, newer methods are continually being advanced and frequently are exploited by commercial interests, and there is no general agreement as to the best procedure. Therefore, the physician is often perplexed as to what method of treatment to follow. Shall he continue along conventional lines, as he has in the past, or resort, for example, to parenteral administration of proprietary preparations of various nature, a procedure now so much in vogue?

The various methods of medical treatment now extant can be classified as follows:

1. Conventional diet-alkali-sedation (modified Sippy regimen).
2. Administration of mucin, duodenal extract, enterogastron, adsorbents (kaolin, aluminum salts).
3. Duodenal or jejunal tube feedings.
4. Continuous, alkalized milk or aluminum hydroxide solution drip.
5. Parenteral administration of proteins, pepsin, insulin, parathyroid extract, vaccines, synodal, histidine hydrochloride.
6. Combined methods.

From my observations, I feel it is safe to predict that parenteral methods of treatment eventually will prove disappointing. The rationale of the use of many of the preparations now on the market is seriously questioned. Protein therapy already has been discredited and discontinued in many quarters. Mucin, too, has had only a short-lived popularity and its use is being gradually discontinued. It seems to me that synodal has lost favor and that larostidin is under fire. It is true that any of these substances at times may give relief and temporarily may appear to have curative value, but in my judgment they are of limited ultimate value. The other methods enumerated above have been found to be more or less useful, and under certain circumstances are highly essential. The diet-alkali method of treatment is the one employed by the majority of members of the medical profession. There is ample clinical, experimental and surgical evidence that any procedure which adequately will control or neutralize excess gastric acidity and secretion, and which in turn usually will correct any impairment of gastric motor function whenever present, promises the greatest success. Modification of Sippy's original method was necessary in order to avoid alkalosis and other physiologic or nutritional disturbances. It was also recognized that complete neutralization was not necessary to promote healing. Dragstedt has shown that the threshold value for the digestion of living tissue lies between 0.10 and 0.15 per cent of free acid (97 to 146 mg. of acid chloride per 100 c.c.). Moreover, it is realized that the judicious use of sedatives and antispasmodic substances, at least in the initial stages of treatment, is also very important. The details of such treatment, and their modifications, have been described elsewhere.⁵

Another useful adjuvant to the usual methods of treatment is duodenal extract. It is given in triple 0 gelatine capsules, each containing 15 grains (1 gm.). Two of these capsules are usually given two hours after the principal meals of the day. According to some recent observations by Rivers, this extract seems especially effective in the treatment of jejunal (anastomotic) ulcer.

Other innovations of practical usefulness might be mentioned briefly. In the last two years, powdered whole milk, of which there are several reliable brands on the market, has been

advocated in place of the standard milk and cream mixture, if the latter does not prove suitable or convenient. The proponents of powdered milk claim that, with its use, neutralization or reduction of acidity is more effective, and the number of daily feedings is reduced almost to half. Each feeding consists of one and one-half tablespoonful of the powdered milk, to which 3 ounces (90 c.c.) of water, and alkalies are added. Tablets of alkalinized, powdered whole milk also may prove effective, according to Wosika. At The Mayo Clinic we have found that these preparations are a convenient substitute for the feedings of milk and cream that have to be taken when away from home between meals; also, in those localities where milk and cream are not readily obtainable.

Substitutes for the alkalies that ordinarily are used often are necessary because some individuals have a low tolerance for alkalies and patients with cardiovascular-renal and hepatic disease, and arteriosclerotic and hypertensive individuals easily may develop alkalosis. When such a complication threatens, one readily can resort to other substitutes, such as tribasic phosphates (tri-calsate) or to adsorbents such as kaolin, aluminum salts, jels or creams. Mutch has extolled the virtues of magsorbent (hydrated magnesium trisilicate) because of its antacid and adsorbent properties and because it can be given in generous doses without disturbing the acid-base equilibrium.

Particularly important in the light of recent researches is the adequate intake of vitamin C, especially if patients have hemorrhagic lesions or tendencies. Blankinship and Oatway have shown that it is feasible to modify milk by the addition of large quantities of orange juice and that such a mixture produces the softest and finest curds. The mixture which these authors have recommended is as follows: milk 24 ounces (720 c.c.), cream 8 ounces (240 c.c.), strained orange juice 10 ounces (300 c.c.), sugar 20 gm. This mixture represents calories 1205, proteins 32 gm., fat 77 gm., carbohydrates 96 gm. Feedings of 6 ounces (180 c.c.) may be taken every two hours from 8 a. m. to 8 p. m. if necessary.

One problem connected with the conventional method of treatment has been its discontinuance during the night, but in spite of this, good results are uniformly obtained in cases in which the patients are suitable for treatment. In re-

fractory cases, the continuous drip method advocated by Winkelstein, by Woldman and Rowland, and by others, should be employed more frequently.

The treatment of profuse gastric hemorrhage has undergone no significant changes. Complete rest, reassurance, hypodermic injections of morphine and atropine, and, in cases of unusually severe hemorrhage, transfusion of whole blood from a suitable donor, still are the sheet anchors. At the clinic we seldom resort to gastric lavage. Dobreff's observations of a woman with an artificial gastric fistula seem to contraindicate application of the ice bag in the presence of gastric hemorrhage. The ice bag caused increase in peristalsis, which sometimes was marked, also hyperemia and increased secretion. A hot water bag had the opposite effect. Revolutionary as it may seem, Meulengracht, of Copenhagen, has made what promises to be an important contribution to the treatment of patients following hematemesis and melena. From the first day after their admission, patients are given a full diet in the form of a purée, together with an alkaline mixture three times daily, and extract of hyoscyamus and ferrous lactate. His procedure has been acclaimed by competent observers at home and abroad, as it definitely shortens the period of convalescence. However, I am still inclined to withhold food for several days after evidence of bleeding has ceased. We have had fairly good results in several cases in which we have used moccasin snake venom.

On infrequent occasions, incomplete or unsatisfactory results during or following treatment are attributable to the fact that the patient is an allergic individual. As milk, egg, and wheat products are so frequently used in treatment, and as they constitute the commoner allergens, sensitivity to foods, as a disturbing factor, always should be kept in mind. Gay went so far as to maintain that peptic ulcer is an allergic manifestation and that the pain of peptic ulcer occurs in the presence of antigenic foods.

Factors Underlying Successful Treatment

Early diagnosis and prompt, adequate treatment, although often a "counsel of perfection" are obviously all-important. Even as recently as 1932 the late Lord Moynihan stated that the failure of medical treatment was attributable to its insufficiency and that very few patients re-

ceived any treatment which offered a reasonable prospect of causing healing of the ulcer. Initial treatment in a hospital for three or four weeks, and supervised ambulant treatment for another eleven months, is the program usually carried out at the clinic. Such treatment should be flexible and individualized to the particular needs and reactions of the patient. Ambulant treatment, too, has its proponents, and may prove very effective. The patient, as well as his lesion, must be encompassed in the plan of treatment. The modern physician is concerned not only with healing of the lesion but with keeping it healed and thereby preventing any recurrences. In order to accomplish the latter, at the clinic we have adopted a more or less systematic plan of education while the patient is still in the hospital, whereby he is made fully acquainted with the nature of his disease and with the rationale underlying his treatment, and is given full instructions not only on how to carry out treatment, but on the necessity of it during the ambulant period when he is not under our direct observation. We particularly stress the baneful influence of nervous and physical fatigue, worry, unhygienic habits of living and eating, and the irritant, deterrent effect of alcohol, tobacco, condiments, stimulating or coarse foods, and hur-

ried, improper mastication. Only in this way can consistent coöperation be obtained and better end-results be expected. In treating a large series of suitable patients who undergo such adequate management, one may expect excellent results in at least 75 per cent of the cases.

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SURGICAL TREATMENT OF PEPTIC ULCER*

DONALD C. BALFOUR, M.D.

Rochester, Minnesota

THE place of surgery in treatment of peptic ulcer requires constant revision. Although the general principles on which surgical operation is undertaken are well established and accepted, the fact that the indications for operation are primarily dependent on, and inseparable from, the status of medical management, requires continuous readjustment of when and how these surgical principles should be applied. The great advances which have been made in the medical management of peptic ulcer have been owing to the many factors which have contributed to better understanding of the disease. Although the cause of peptic ulcer remains elusive,

the circumstances under which it develops and recurs are beginning to assume significance and the course of the disease is more predictable than it has been in the past. There are many reasons for these advances. From the experimental laboratory certain principles in relation to cause of the condition have been established and are constantly applicable to an understanding of peptic ulcer. The rôle of the acid factor was proved beyond any doubt in experiments on diversion of the alkaline fluids from the duodenum by the methods of Mann and his coworkers, and in work on the production of ulcer by cinchophen. Moreover, the effect of both medical and surgical therapeutic measures influencing the production of ulcers has made possible most important observations relating to the factors respon-

*From the Section on Surgery, The Mayo Clinic, Rochester, Minnesota. Read in a Symposium on Peptic Ulcer before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 3, 1937.

sible for peptic ulcer. Roentgenology has developed beyond the phase of determining whether or not a lesion is present, so that now it is possible to make sharper differential diagnosis of the types of lesions; it is also possible to determine the degree of deformity, the effect of the lesion on gastric function and the relationship of gastritis to ulcer, as well as to demonstrate the effect of surgical procedures. These advances have added immeasurably to better understanding of the disease and its complications.

To the advantages which have come from the indirect methods of roentgenologic visualization are now added those of direct inspection of the stomach by means of the gastroscope. Enough experience with use of the flexible gastroscope now has been gained to give this method of examination a permanent place in the diagnosis of gastric lesions. Frequently the gastroscope will add some useful information about a lesion which is known to be present in the stomach, and in an occasional case in which repeated roentgenologic examinations are negative the gastroscope can prove the presence of a lesion. This should always be kept in mind in cases in which the clinician believes that the symptoms indicate some obscure lesion of the stomach.

More important than all has been the progress which has been made in the medical management of ulcer. This has come chiefly from the repeated demonstration of the fact that with an adequate knowledge of the disease, applications of present day methods of medical treatment, and above all aided by coöperation of the patient, the clinician has been able to increase infinitely the possibility of satisfactory control of the disease.

In evaluation of these important contributions, surgical methods have been essential, not only because of the excellent results of properly applied management but particularly in revealing pathologic changes and thereby making possible intelligent coördination of knowledge, data and findings which may be obtained by other means.

The one basic indication for surgical operation in peptic ulcer at present is failure to control the disease by adequate medical management. Although this is an acceptable principle in practice, it cannot be looked on as the ideal for which modern medicine should strive. The idea to be attained in treatment of any disease should be its prompt and permanent cure. At

present, this ideal undoubtedly has been attained in a considerable percentage of cases of peptic ulcer but it is also true of the majority of these patients that more or less regulation of their habits of living is necessary. This commits many of these patients to a routine which is sufficiently different from the habits of people in normal health that there is the constant temptation to return to normal habits of living with the consequent danger of bringing about recurrence of the disease. The ideal treatment of a disease of the character of ulcer, then, would be that which would enable the patient to follow more or less normal habits of living.

With the present incomplete knowledge of the cause of ulcer, and considering the relative importance of the many factors which are believed to contribute to the production of ulcer in the individual case, it apparently is necessary continuously to maintain those conditions which will in turn control these causative factors. It is in this respect that surgical operation offers so much to the patient who has ulcer, for there are various types of operations which, in the great majority of instances, are sufficient to maintain such satisfactory control of enough of the major factors involved in the cause of ulcer that other uncontrolled factors are not sufficient to bring about recurrence of the disease. On the other hand, recurrence does occasionally take place after surgical management, because the particular procedure performed did not sufficiently eliminate some of these major factors. If the surgical treatment of ulcer could progress to a point at which it could be more definitely known in the individual case just how far it was necessary to go in controlling these major factors, it would do much to solve the problem of treatment. For example, if it were possible as soon as a diagnosis of peptic ulcer is made to institute some form of surgical management which would routinely have a lower operative risk than the ultimate risk of the disease, and if such surgical management should establish such modification in gastric function that absolute protection would be given against recurrence of ulceration, it would be a great contribution to medicine because of the great frequency of ulcer and the enormous economic loss imposed by the recurrent nature of the disease and by the complications with which ulcer is associated. I believe that very definite advances have been made to-

ward this ideal, chiefly in respect to recognizing those cases in which the condition is going to be resistant to medical management. In this group of cases, when surgical management is carried out the patient is spared much time, expense and suffering.

The problem, therefore, of the surgical management of ulcer is the same as that of the medical management; it is largely one of prevention of recurrence of the disease. The cure of any ulcer by surgical management is a relatively simple matter in principle. Almost any procedure which will relieve intragastric tension, thereby obviating hypermotility and hypersecretion, is sufficient to bring about healing of the lesion. Restoration of physiologic function, which is a very important factor to take into consideration in all operations which are on a physiologic basis, always must be considered in the type of operation which is carried out. For this reason, those operations which involve the innervation of the stomach through the vagus nerves have been abandoned because it has been shown, both experimentally and clinically, that any immediate effect in respect to reduction of acid is more than counterbalanced not only by the return to acid values that were present before the vagus nerves were interrupted but also by other results, particularly hypomotility, which may give rise to a group of symptoms which are more disabling than those originally associated with the ulcer. Therefore, since surgical management is based almost entirely on indirect effects and because of the ease with which the lesion for which the patient was operated on can be healed, an understanding of the effect of different types of operations in maintaining permanently those conditions which will prevent recurrence is most important.

Experience has shown that in the surgical management of peptic ulcer a direct attack on the lesion is insufficient and some indirect surgical procedure must be done to give the patient the highest degree of protection against recurrence of the disease. The effect of these indirect procedures is modification of gastric function, particularly lessening the activity of the secretory and motor mechanism. If this is true, the best type of operation for ulcer should be that which would provide the greatest modification of such function. It may be argued, however, that the ideal operation would be that which would

modify function and maintain this state of affairs just enough to prevent recurrence of the disease, since it has been shown clinically that when such changes in gastric function are carried to extremes another train of symptoms may be produced which may be just as disabling as the symptoms of ulcer. Since it is true that the cure of any given ulcer by surgical means is relatively easy to bring about, the chief problem with which the surgeon has to deal is that of maintaining some treatment of the ulcer, by surgical means, which will prevent recurrence.

The general plan of the operations which are performed with this in mind vary in the effect which they have on gastric function and on the prevention of recurrence; the extremes in these effects are represented, on the one hand, by operations on the pylorus and, on the other, by extensive gastric resection. With the former type of operation, end-results are satisfactory in a smaller percentage of cases than in perhaps any other type of operation used in the treatment of ulcer. The fault, however, probably is not in the operation itself but in the fact that various types of reconstruction of the pylorus of the stomach are attempted in cases in which they should not be applied. A careful review of a series of cases sufficiently large to be of some value as a study will show that, regardless of the situation of the lesion, if reconstruction of the outlet of the stomach is performed so that it accomplishes two purposes, namely, permanent ablation of the pyloric muscle and at the same time construction of a pyloric outlet as large, for instance, as that effected by gastro-enterostomy, the result will be excellent, not only in relief of symptoms but in protecting the patient against further ulceration. It is only when such an opening can be constructed that operations on the outlet of the stomach should be considered. At the other extreme, lies extensive resection for ulcer; there is no operation which is more satisfactory, but again it should be applied only when clearly indicated. In cases of large gastric ulcer it is the operation of choice when it can be carried out reasonably safely, but for duodenal ulcer it would seem to be more sound to attempt to apply the more conservative methods according to the type of lesion which is present.

Experience has shown that when a conservative method has been carefully selected the re-

sult would be difficult to improve on by any other procedure. Although it has been suggested that one of the very late results of partial gastrectomy for duodenal ulcer would be great hyperactivity of gastric function, such results are not as yet known. There are no large series of cases in which a sufficiently long time has elapsed after the operation to make of value a comparison with the known late results of conservative operations. Between these two extremes of surgical procedure for peptic ulcer, gastro-enterostomy finds a most useful place and the principles on which long experience has founded the operation are: an adequate reason for operation, conditions suitable for gastro-enterostomy, making of an opening sufficiently large and reasonable attention to habits of living following the operation.

In the event of recurrence after any of these operations, namely, reconstruction of the outlet of the stomach, gastro-enterostomy or partial gastrectomy, recurrence of the original condition should be treated in the same way as that in which a primary lesion is treated; that is, every effort should be made to cause the lesion to heal and to remain healed and, if this is not possible, further operation should be carried out. Then it should be recognized that the patient has demonstrated a particular liability to recurrence of the disease and the most valuable procedure becomes justified. The same general principles of treatment can be applied by the surgeon as by the clinician and it is through the application of these principles that the best results of surgical management will be obtained.

Medical Question Court on Ulcer Symposium

CHAIRMAN O'BRIEN: We have twelve questions here which have been submitted for answer by the men who have taken part in the symposium. I am going to ask each man to limit his reply to two minutes.

The first question is for Dr. Mann:

"How do you account for the seasonal occurrence of symptoms in duodenal ulcers? In all discussions on the cause of ulcer I have never heard this explained."

DR. F. C. MANN, Rochester, Minn.: I feel like answering this question in the same manner as the high school boy who was asked to explain Einstein's theory—"Ask me an easy one." It is obvious that we do not have any accurate answer to the question, at least I do not. The problem divides itself into two parts: first, whether there is an actual flare-up of the organic lesion, and actual tissue changes in the ulcer; and, second, whether it is simply an accentuation of the symptoms. The answer to the latter probably also bears some relationship to whether or not we have a seasonal variation in the threshold of reception in the central nervous system and it becomes a problem of the central nervous system.

Then the former is also divided into two parts: first, whether the seasonal variation causes a change in the physical and environmental stress, which we know does affect the coordinated mechanism of the gastro-intestinal tract of which I spoke. In the second part we have the variation in diet and that also can be divided into two parts: namely, whether there is adequacy or inadequacy of the vitamins, and, second, whether there are changes in the reaction of the ingested food.

I feel that we can answer this question when we can answer the question of why the human being at this season of the year takes his market basket on his arm or a knife in his hand and goes down the byways and the pathways and cuts greens.

CHAIRMAN O'BRIEN: The next question is for Dr. Eusterman:

"Certain patients with ulcers seem to be cured by advertised stomach powders. How do you explain this?"

DR. G. B. EUSTERMAN, Rochester, Minn.: Well, if you accept the claims of manufacturers you want to take them for what they are worth. In recent years there has been a very popular tablet made here in the Twin Cities. In this particular tablet sodium is eliminated and bismuth substituted, or the sodium is at least reduced.

Of course, all of these tablets probably are no more effective than tablets dispensed by physicians and I think the reported cures are more apparent than real.

I want to add that I have observed twelve cases in which the gastric lesion probably started as an ulcer or early cancer but when I first saw the patients they had inoperable cancer. They had taken these proprietary tablets for an average of two years. If the patients had gone promptly to their physicians some of them would probably still be alive.

I doubt the efficiency of any commercial tablets over the tablets that are prescribed by any reputable physician, but I do think that the combination or proportion of the ingredients of some of these tablets has been improved over the old, ordinary run of tablets formerly given to patients.

CHAIRMAN O'BRIEN: The next question is for Dr. Morse:

"How certain can one be from the x-ray examination as to whether an ulcer is benign or malignant?"

DR. R. W. MORSE, Minneapolis: In the great majority of cases I think one can be quite certain because the gross pathologic changes of cancer and ulcer are entirely different. In ulcer we have a loss of substance with the surrounding area of inflammation which was developed because of insults which led to the loss of substance. We have a crater which is centric to the

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area of induration. In cancer we have an irregular or regular tumor in which ulceration can occur at any point and the ulcer may be of any size. The crater is usually irregular and is usually not centric to the area of induration. We do get cases of carcinoma in which we have the typical appearance of benign ulcer. Fortunately these are very rare and do not, I think, constitute over 1 or 2 per cent of all cases.

In a malignant tumor we have an intrusion into the lumen of the stomach, whereas with a benign ulcer we have a crater protruding from the lumen of the stomach. If we will take a little more time and follow the healing we will get more help. An ulcer which is progressively diminishing in size should be benign. If it heals partially and then refuses to heal any further, it should be considered malignant.

CHAIRMAN O'BRIEN: This question is for Dr. Balfour:

"I have a patient with a chronic gastric ulcer who has been to a surgeon who has recommended gastro-enterostomy. The patient fears a jejunal ulcer if he has it done, as one of his friends had one. What assurance can I give him?"

DR. D. C. BALFOUR, Rochester, Minn.: I think one can very promptly assure this physician that the danger of a jejunal ulcer after gastro-enterostomy for gastric ulcer is practically nil. I am not able to give an explanation as to why jejunal ulcer is practically never seen when gastro-enterostomy is done for gastric ulcer or for any lesion in the stomach, and why it is practically confined to gastro-enterostomy for lesions in the duodenum. The most likely explanation, of course, is that in cases of gastric ulcer the gastric acidity is consistently on a lower level than it is in those of duodenal ulcer. Although the acid is still present in cases of gastric ulcer, as far as fear of a jejunal ulcer following gastro-enterostomy is concerned, it can be practically dismissed.

CHAIRMAN O'BRIEN: The next question is for Dr. Mann. He seems to be getting the hard ones:

"Is it possible for an ulcer to develop in a patient without acid in the stomach?"

DR. F. C. MANN, Rochester, Minn.: A few years ago Dr. Palmer investigated this question by a review of the literature and a study of his own cases and he concluded that ulcer does not develop in the stomach without the presence of acid. The data on the experimental side are very positive, and an experimentally produced ulcer has never occurred in the mucosa of the gastro-intestinal tract in the absence of a content that was not acid. In other words, no ulcer has ever been produced without the presence of acid.

CHAIRMAN O'BRIEN: The next question is for Dr. Eusterman:

"I know that rest is important in the treatment of ulcers. How can one advise a patient who has to work and support his family to take rest?"

DR. G. B. EUSTERMAN, Rochester, Minn.: I think that noon rest is quite possible for all of us if we make the effort. I know that I have always been able to have a patient arrange his affairs so that he could stay away from work from 12 to 1 or 1:30 and sometimes to 2 P.M., until the probation period of the healing treatment was over. Noon rest, which is a break in occupational or professional stress, is important. Some of the most distinguished members of the medical profession advocate that all of their pa-

tients who are past forty-five or fifty years of age take a twenty-minute nap at noon. That is not only valuable for patients who have peptic ulcer but also helpful in forestalling degenerative lesions of all kinds.

Another important thing is the matter of week-end rest. Some of us make our week-ends as well as our vacations so strenuous that they do us more harm than good. I know I have been guilty of that. Week-end rests, instead of consisting of playing a lot of golf or going on long hunting or fishing trips with their late hours and other indiscretions, should often include a good deal of time spent in bed. Women do that naturally; they don't need to be told, as a rule, but men do not follow this custom. That is one reason why the problem of ulcer healing is so much greater in men than in women.

CHAIRMAN O'BRIEN: A question for Dr. Morse:

"Can you tell from the x-ray if healing in an ulcer is taking place?"

DR. R. W. MORSE, Minneapolis, Minn.: There are two ways you can tell from the x-ray examination whether healing is taking place. One is by observing the shape and character of the crater of the ulcer, and the second is by noting a diminution in the size of the crater.

This is a good opportunity to stress one point regarding x-ray examination of these conditions. Once the examination is made, it is old history and any question that comes up in the future in regard to what is taking place cannot be answered by the previous x-ray examination.

CHAIRMAN O'BRIEN: A question for Dr. Balfour:

"Should patients with bleeding ulcers be given a transfusion? I believe it makes them worse by raising the blood pressure. What do you think is the best treatment?"

DR. D. C. BALFOUR, Rochester, Minn.: I think that is a perfectly reasonable question because, as you know, there has been a good deal of debate about whether transfusion can raise the pressure enough so that you fail in the very thing you are trying to accomplish, and that is to stop the bleeding. I think the general impression is, however, that this danger is much overrated. I suppose one can simplify the answer by saying that there are times when you have to give a transfusion to save the life of the patient, and then I think one doesn't need to worry about any theories as to whether it may interfere with clotting. So I believe the danger is not very real, and I presume that many more lives have been saved by transfusion in cases of bleeding ulcer than have ever been lost by the injudicious use of it.

CHAIRMAN O'BRIEN: This question is for Dr. Mann:

"Foci infections were once thought to be a very important factor in the development of peptic ulcer. Are they still considered a cause?"

DR. F. C. MANN, Rochester, Minn.: I am afraid I would flunk if I met this question on an examination. However, I should like to make four statements. First, that a focal infection, if it is a real infection, is a bad thing under almost any condition, and certainly it would be bad imbalance of the physiologic mechanism of the gastro-intestinal tract; second, while we talk of the mechanism of the production of ulcer, the actual initial cause is still unknown and there may be many causes—bacteria may be one of them; third, the ulcers which we have been studying are not caused by bacteria, although they are usually secondarily infected; and fourth, the induration, and so forth, of these ulcers

MEDICAL QUESTION COURT

that we have been studying I believe are mainly due to infection from bacteria.

CHAIRMAN O'BRIEN: Dr. Eusterman:

"Is typhoid vaccine intravenously of any real value in the treatment of ulcers?"

DR. G. B. EUSTERMAN, Rochester, Minn.: Of course, the principle of typhoid vaccine treatment is like that of any shock or protein therapy. We have used typhoid vaccine in cases of arthritis, but I don't think we have ever used it in cases of ulcer. I use vaccine made from organisms isolated from teeth and tonsils and prostate glands in the treatment of ulcer, as subsidiary to other methods. This whole matter of vaccine therapy is on the same basis as protein therapy. Various proteins are used. Those who are proponents of foci of infection as the important etiologic factor think that any vaccine, or even a foreign protein, may produce relief. The idea is that it builds up resistance, increases the defensive area about the ulcer, reduces acidity and spasm, improves local circulation, and therefore promotes healing.

CHAIRMAN O'BRIEN: Here is one more for Dr. Eusterman:

"Do you allow ulcer patients during their post-medical care to have coffee, alcohol or tobacco?"

DR. EUSTERMAN: We annually see from 1,500 to 2,000 patients who have ulcers. The greatest number of these patients are men and the majority of the ulcers are in the duodenum. Uncomplicated gastric ulcers heal very readily; duodenal ulcers heal with difficulty. I don't think there is anything so easy to heal as an early gastric ulcer, and the greatest problem in the management of the men, in contrast to the women, is the problem of their personal habits. I think Dr. Balfour agrees with me that the greatest deterrents to cure are tobacco, alcohol, emotional and nervous and physical stress, and indiscreet habits of eating; the chief offenders are tobacco and alcohol. We, as physicians, are not helped any by all of these glamorous and misleading cigarette advertisements that we see in all of the newspapers and magazines.

Some patients are more sensitive to tobacco and alcohol than others, and patients who want to get well had better abstain from them. Patients who have always smoked heavily will never smoke reasonably for any length of time. They absolutely should not use tobacco. Some of the most distinguished gastro-enterologists make patients sign a statement that the latter are going to discontinue the use of tobacco for a specified period, and unless the patients do that the gastro-enterologists will not accept them as patients. So you see, these men in question feel rather keenly about the abuse of tobacco.

The caffeine in coffee, like alcohol, is a distinct secretagogue. It is often used in the place of histamine in gastric examinations. Coffee and alcohol and tobacco are inimical to the healing of ulcer. Once the ulcer is healed, of course, some patients remain well in spite of going back to the use of these substances.

I also feel that patients who have old, chronic ulcers can have more leeway after operation than those who have not been treated medically. The patients who get results cooperate with us in this respect, and they may after a while go back to a restricted use of all of these things without any great harm.

Decaffeinated coffee is often permissible. I often allow, even during the period of treatment, decaffeinated coffee, well diluted with milk. One can get denicotinized tobacco; not all but a good deal or most of the nicotine, about 96 per cent, I have been told, has been taken

out. As you know, the *Journal of the American Medical Association* contains advertisements of medical cigarette holders and pipes, which have filters that are said to take out a great deal of the toxic properties of tobacco besides the nicotine. In these ways you can help the patient who has ulcer but you will find that he must be watched because a man who has once used these things excessively as a rule will never use them in moderation any great length of time.

CHAIRMAN O'BRIEN: Dr. Morse:

"In a patient with signs of acute ulcer of few days duration, I have often not been able to demonstrate the ulcer (if one is present). Have you suggestions to make?"

DR. R. W. MORSE, Minneapolis, Minn.: The first thing to admit, of course, is that the examination was adequate. Even so, ulcer symptoms with an ulcer being present can occur without being able to find the ulcer on x-ray examination. One possibility which I covered earlier in the talk is that at the time the x-ray examination was made, the insult was present but the hole had not formed. A second possibility is that many ulcers are so small that we do not see them either on fluoroscopic examination or on x-ray films made in the correct manner of the stomach and duodenum. You see this particularly in cases in which there has been hemorrhage from minute ulcer of the duodenum without deformity of the duodenum that would show on x-ray examination. A second x-ray examination several weeks later may show small scar tissue deformities characteristic of ulceration. A third possibility is that one is dealing with symptoms of some other condition; I mean other conditions which simulate ulcer without an ulcer actually being present. The two most frequent are gastritis and functional disturbance of muscle contraction. I think that upsets of muscle motor function in both the stomach and in the large bowel can sometimes simulate very closely the clinical picture of ulcer.

CHAIRMAN O'BRIEN: The last question is for Dr. Balfour:

"When is surgical interference indicated in a chronic gastric ulcer because of possible development of malignancy?"

DR. D. C. BALFOUR, Rochester, Minn.: I think that question rather answers itself from what remarks have been made here today about gastric ulcer, that is, that the only safe advice that you can give a patient with a gastric ulcer which is not healing is that the ulcer should be removed. Of course, one can find exceptions to following out that principle. Two occur to me at the moment, and the first is that although the small gastric ulcer may be malignant, it is very rarely so. As Dr. Eusterman pointed out, it is the large lesion which is likely to be found to be malignant. You can find ulcers of not more than 0.5 cm. in diameter with definite evidence of malignancy, but they are so rare that the risk of routinely dealing with them by operation may be greater than the risk of their being malignant. The second exception, of course, is a very general one, and that is where the patient's condition is such that operation is of too great a risk.

So I think the answer to the question, "When is operation indicated for chronic gastric ulcer because of possible development of malignancy?" is that there is not sufficient danger of malignancy in the cases of very small lesions to recommend operation on that basis and, if the lesion is large, that it is inadvisable to wait for evidences of its being malignant, but one must assume that it may be and advise the patient to have the lesion removed.

SHALL WE REDUCE OUR PNEUMONIA DEATHS?*

LUCY S. HEATHMAN, Ph.D., M.D., O. McDANIEL, M.D., and A. J. CHESLEY, M.D.

Minneapolis, Minnesota

PNEMOCOCCUS typing and therapeutic serum distribution was begun by the Division of Preventable Diseases, Minnesota Department of Health,** the past January, and although data collected are not sufficient from which to derive scientific conclusions, it is believed that physicians of Minnesota will be interested in a progress report. The work does demonstrate the feasibility of pneumonia control work by a Health Department in a State such as Minnesota, where the population is mostly rural in distribution, and where the practicing physicians must depend largely on centrally located laboratories. It has been gratifying to find how enthusiastically the physicians of the State have responded to this service and how well they have coöperated in supplying data requested by this Division. Although the beginning is small it is believed it bids fair for an effective reduction in pneumonia mortality which stands in the fourth place as the cause of death in Minnesota. It is realized that attainment of this end will take years.

From the beginning, typing has been done in the Division Laboratories for the thirty-two different types, I-XXXII, as it is only in gathering complete clinical, epidemiological and laboratory data that the necessary knowledge of pneumonia could be obtained. The importance of complete data is becoming more evident each year as knowledge of this disease grows. A number of comprehensive studies covering several thousand cases respectively have been recently published. Much information is to be gained and the full significance of all data collected is not yet entirely clear. However, it is evident that, in order to gather full information, pneumonia must be considered from the standpoint of bacteriological etiology as well as clinical symptoms and anatomical location. It has been

shown by Suttliiff and Finland⁶ in adults, Bul-lowa² in adults and children, and Nemir⁵ in children, that pneumonia should be classified according to the specific bacterial etiology as well as to anatomical site. Suttliiff and Finland⁶ reported in 1933 that in a series of 1,561 hospital cases, pneumococci were isolated and typed in 1,094. Typing was done for Types I through XX. Because pneumococci classified under Group IV are found in many so-called normal mouths the attempt was made to isolate these organisms from blood or directly from the lesion during life, or at autopsy. As a rule the same organism was found in the blood or lung as in the sputum. If two organisms were present, one being Type I, the latter was most commonly found in the blood or lesion although mixed infections rarely occurred. Types I, II, III, V, VII and VIII were recovered from 81 per cent of pneumococcus pneumonias and the remaining types from 19.5 per cent. It was difficult to sharply differentiate lobar and bronchial pneumonia clinically but this was done at autopsy in quite a number of cases. In 97 per cent lobar pneumonias, pneumococci were recovered with I, II, III, VIII, V and VII, in order of frequency, totaling 84.1 per cent of the typed cases. In bronchial pneumonia, typed pneumococci constituted 65.1 per cent, the order of frequency being III, VIII, XVIII, X, V, VII, XX, II, XI, XIV; and untyped pneumococci 16 per cent.

Finland³ in 1937 reviewed 3,682 cases which occurred in a seven year period at the Boston City Hospital in which pneumococci were grown in culture. It is of interest that there was a sharp increase in the number of cases of II, V, and VII during 1935 and 1936, and the mortality also varied with the season. The most frequent types found in lobar pneumonia were I, II, III, V, VIII and VII, in order of frequency, making 79 per cent in all. All cases of patchy consolidation were called atypical rather than broncho-pneumonia and constituted about one-fifth of all cases of pneumococcus pneu-

*From the Minnesota Department of Health.

**Pneumococcus typing and serum distribution is also carried on by the St. Louis County and Duluth Branch Laboratory, 228 New Jersey Building, Duluth, by Rural Health District No. 1, City Hall, Bemidji, and Rural Health District No. 2, Court House, Mankato, as well as by the Laboratories of the Division of Preventable Diseases, Minnesota Department of Health.

monia. The most frequent types were III, VIII, X, XX, XVIII and VII, accounting for one-half of these cases. Most of the material from children was obtained from pleural exudate or from autopsy material. Type I was found in 50 per cent and V, XIV, II, VI, and III next in frequency, totaling 82 per cent of cases. In 764 fatal cases typed at autopsy the order of frequency was the same as above for lobar pneumonia. In the autopsied cases of atypical pneumonia, Types I and V ranked high in frequency. The peak incidence of lobar pneumonias was reached in the fourth and fifth decades, and that of atypical pneumonias in sixth decade. Fatal purulent infections without pneumonia were caused by Type III in more than one-half the cases.

Bullowa² in 1937 reviewed 4,048 endemic pneumococcus infections in children and adults in Harlem Hospital. In adults, Types I, II, III, IV, V and VII, each, constituted more than 5 per cent, Type I leading with 23.7 per cent; all totaled to 64.4 per cent. In children, XIV, I, VI, XIX, V, IV and III were the types more often found, XIV leading with 17.5 per cent of cases and I second, with 16 per cent. In adults Types II, III, XV and in children XIII, XXVIII, XXIII and XV were the most fatal.

Non-pneumococcic infections of the upper respiratory tract of adults and children were also studied. In adults Types III, VI and VIII predominated, while in such infections in children Types VI, XIV and XIX predominated.

Nemir⁵ in 1936 reviewed 1,033 pneumonias in children ranging in age from two weeks to thirteen years in which pneumococci alone were found in 796. Repeated pharyngeal swabs were taken on those showing III, VI or XIX or any other common mouth types. Most frequent types found were XIV, I and VI, constituting 42 per cent. Type XIV was the commonest cause of pneumonia under two years, and I in the older child. These types occurred infrequently without pneumonia. Type VI and XIX were found almost exclusively in pneumonia in children under two years and both were also frequently found without pneumonia in older children. It is noteworthy that 93 per cent showing I, XIV, VII and V had lobar pneumonia, while Types III, VI and XIX were almost as common in broncho-pneumonia. Approximately

two-thirds of the patients with broncho-pneumonia showed associated streptococci or staphylococci or types of pneumococci found in carriers, as III, VI and XIX. In 425 patients studied with tonsillitis or sinusitis, Types VI and IX were the commonest invaders. The author is in doubt as to the significance of the higher types found in broncho-pneumonia.

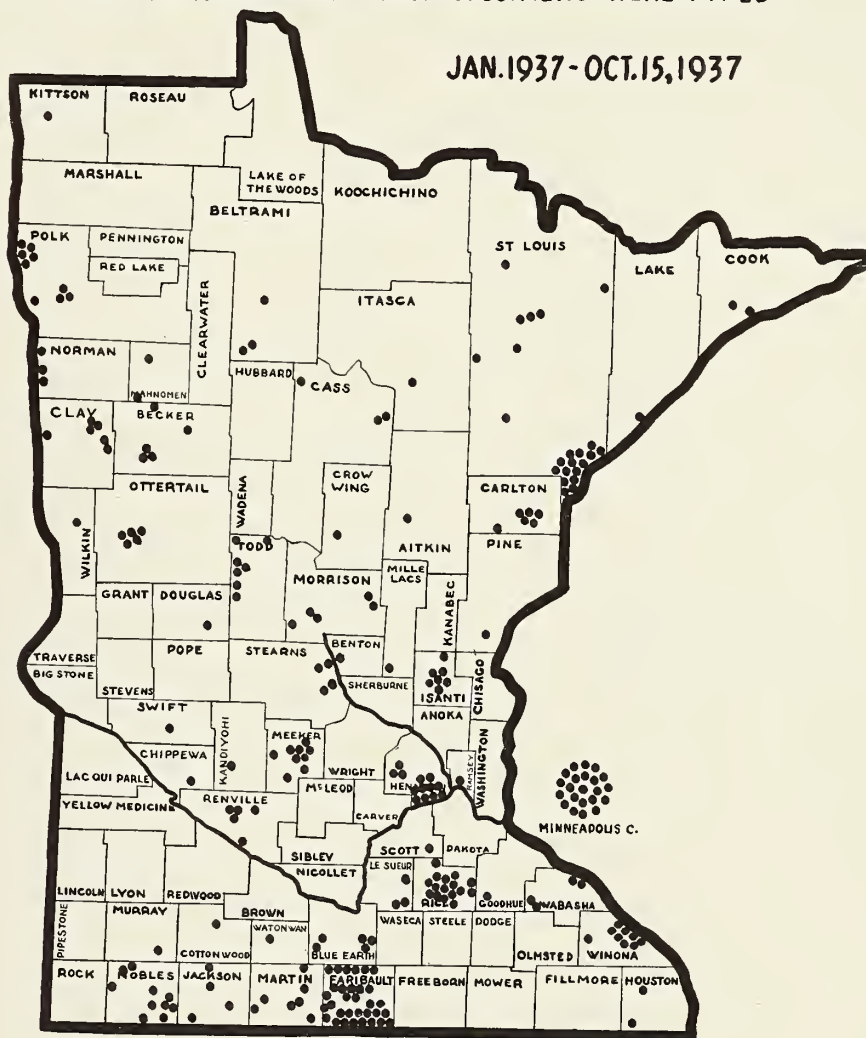
Serum Therapy

Recent reports show a marked reduction in mortality in use of serum therapy in Types IV, V, VII, VIII and XIV, although series of cases collected recently are not large. Since our previous summarization of results (MINNESOTA MEDICINE, January, 1937), Bullowa¹ has reported that of eighty-six cases of Type XIV pneumonia, there were twelve deaths or 19 per cent in sixty-three untreated cases, and two deaths or 8.6 per cent in twenty-three treated with specific serum. There have been further publications on the use of therapeutic serums in Types V, VII and VIII but it is difficult to determine whether or not there may have been some overlapping with former publications. The response to serum is encouraging since these types make up the largest incidence found in pneumonia other than Types I, II and III. One of the most encouraging advances recently in serum therapy is the development of anti-rabbit therapeutic serum. Horsfall and Goodner⁴ recently reported on a small series of cases treated in the Hospital of the Rockefeller Institute. Of twenty-two patients treated, ten with Type I infection, four with Type II, three with Type VII, five with Type VIII, twenty-one recovered and one died with rupture of the aorta five weeks later. Of the twenty-two, twelve had a bacteremia and three infected pleural exudate. In two of the pleural exudate cases the pneumococcus disappeared from the pleural effusion after serum therapy, and empyema did not develop. After treatment rabbit serum antibodies were demonstrated in the effusion. These results suggest that rabbit antibody penetrates the pleural cavity and thus is able to attack infected pleural effusions. This has never been proven for horse serum antibody. The reason suggested is that rabbit antibody has a smaller molecule. The authors claim less immediate reaction and less serum sickness after the use of anti-rabbit serum

than horse serum, after the chill-producing properties of rabbit serum had been removed. It is known that rabbit serum is quite often toxic for human beings but it is now reported that these

that produced in rabbits. Preliminary reports would suggest that it may be possible to give therapeutic serum required for treatment in one dose of concentrated rabbit serum. Anti-rabbit

MINNESOTA DEPARTMENT OF HEALTH - DIVISION OF PREVENTABLE DISEASES 256 PATIENTS FROM WHOM SPECIMENS WERE TYPED



Map 1.

properties have been removed by refinement. Anti-rabbit serum can be produced in smaller amounts in a shorter time for use in pneumonia due to the various types, as almost all rabbits apparently produce potent antisera in a few weeks. This is of especial importance in relation to the higher types, since immunization of horses is much more uncertain for the higher types of pneumococci and six months to two years is required to produce potent antisera. The serum in horses is not of as high a potency as a rule as

therapeutic serum for all thirty-two types of pneumococci, including Type III, will soon be on the market,* although the amounts of some of these will be limited.

Report on Present Work

From January 20 through October 14, 1937, 432 specimens have been received for pneumococcus typing at the Division Laboratories. Of

*According to a recent statement from one of the commercial houses, therapeutic serum for the thirty-two types of pneumococci will be on the market January 1, 1938.

the above specimens 144 were largely pharyngeal swabs taken from babies with upper respiratory infections and from their contacts at a local home and will not be further analyzed. Of the 288 remaining specimens from 256 patients, 182 representing 166 cases were successfully typed. Map I shows the distribution of the patients from whom these specimens were received. Of the 182 specimens there were 140 in which the direct Neufeld typing was successful and 167 in which mouse typing was successful. The failure of the Neufeld was due to inadequacy of original specimen, either sputum or material on throat swabs. In a few instances more than one type was found. Three of these were types for which serum was available. One showed I and VII, in the Neufeld and Type I was recovered from the mouse. Type I serum was given on the fifth day but the patient died. In the second specimen, the Neufeld was unsuccessful and I and VIII were recovered from the mouse. Type I serum was given with marked benefit and the patient recovered. In the third instance, the Neufeld was unsuccessful and I, III and XIX were recovered from the mouse. The patient recovered without serum. Types represented by the 182 specimens are shown in Table I.

Of the above 166 cases, 95 fell into Groups I, II, V, VII and VIII for which serum was available. Serum was distributed as shown in Table II by the Division for use in these patients.

It is obvious that no conclusions as to the benefits of serum therapy can be drawn from such a small group. There were nine deaths in a group of sixty-seven patients receiving serum, giving a fatality rate of 13.2 per cent. In the large majority of the patients receiving serum the physicians reported marked or dramatic improvement when serum was given within the first four days. In each case reasons for death were given by the attending physician such as meningitis, extreme age, or serum was administered

TABLE I. SUCCESSFULLY TYPED SPECIMENS

Type	Number of Specimens	Cases Represented
I	53	51
II	18	17
III	16	15
IV	9	7
V	12	10
VI	2	2
VII	10	8
VIII	9	9
IX	5	4
X	1	1
XII	5	5
XV	4	4
XVI	4	4
XVII	6	5
XVIII	9	7
XIX	3	3
XX	2	2
XXIII	1	1
XXVII	1	1
XXIX	9	8
XXXI	2	1
XXXII	1	1
	182	166 cases

too late in the disease to be of benefit. Of the patients receiving serum twelve, or 18.6 per cent, developed typical serum sickness six to ten days after first injection. Seven (10 per cent) showed immediate serum reactions, and six (9 per cent) developed mild reactions one-half hour to several hours later. In one patient known to be sensitive to horse serum, treatment was discontinued after one dose. In no other instance was the serum sickness reported to be alarming.

It is of interest that, of patients hospitalized and those who remained at home, the ones who were treated at home appeared to get along better. However, when figures are analyzed it is seen that the ones with complications were those taken to the hospital.

There were eight specimens of spinal fluid from patients with meningitis of which two showed Type III and the others Types IV, VI, VII, XII, XVII and XIX respectively. Three of these persons had otitis media previous to meningitis.

TABLE II

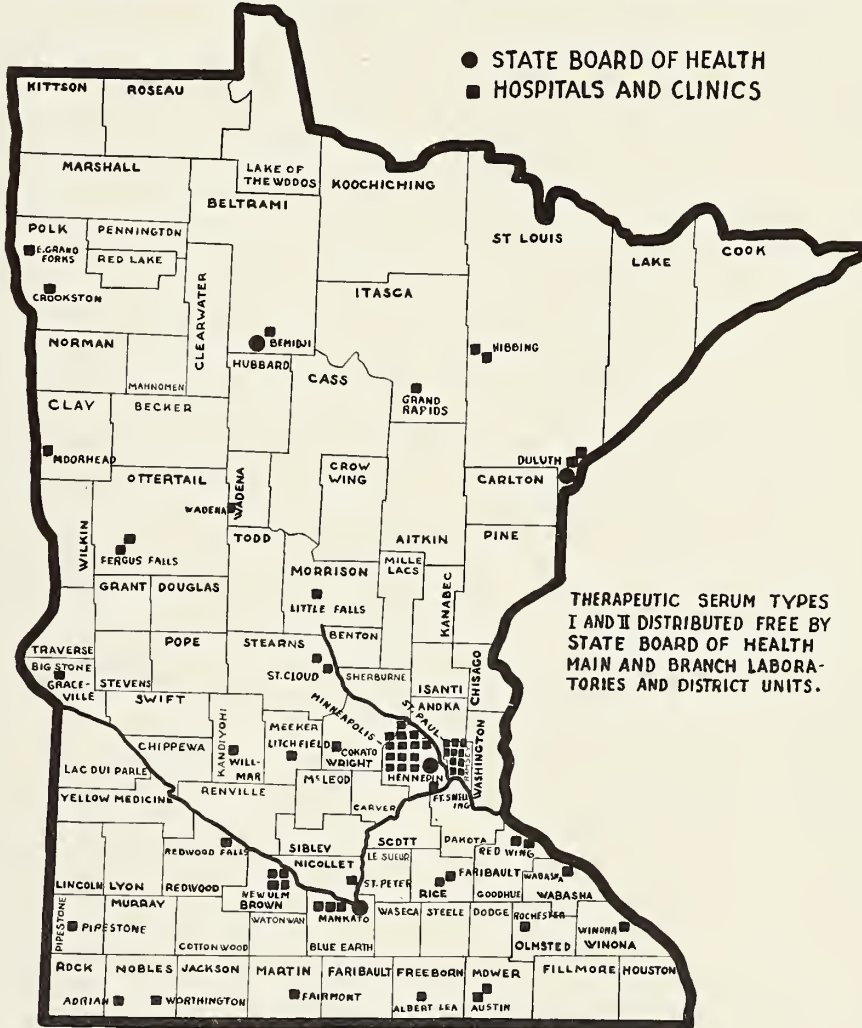
Type	Number of Patients	Serum Used	Number of Deaths and Fatality Rate	
			After Serum	No Serum
I	51	39	4 (10.2%)	2 (16.6%)
II	17	14	0 (0)	1 (33 %)
V	10	5	0 (0)	0 (0)
VII	18	5	*3 (60 %)	0 (0)
VIII	9	4	0 (0)	0 (0)
Total	95	67		

*One patient died of meningitis.

Of the 106 specimens from ninety patients in which typing was unsuccessful, data were obtained from the physician in only sixty cases (eighty-three specimens). Analysis of the data available

tubercle bacilli. This was more or less experimental to ascertain whether one might find new tuberculous infections in this way. Of 169 specimens of sputum, four showed the presence

MINNESOTA DEPARTMENT OF HEALTH-DIVISION OF PREVENTABLE DISEASES PNEUMOCOCCUS TYPING SERVICE AVAILABLE IN MINNESOTA



Map 2.

yielded the following information: twenty-seven were probably lobar pneumonia, eleven broncho-pneumonia or hypostatic pneumonia, seven active pulmonary tuberculosis, two pneumococcus meningitis, three asthma and ten were termed definitely "not pneumonia."

Demonstration of Tubercle Bacilli

On all sputum specimens where sufficient material was received a routine microscopic examination was carried out for demonstration of

of tubercle bacilli. Three were from patients who had not been previously diagnosed. One of these three patients also showed Type I pneumococcus in the sputum, and apparently had typical lobar pneumonia. In addition tubercle bacilli were found in sputum from one patient who had been previously reported as having tuberculosis.

Analysis of Data as to Time Element

It has not been possible because of lack of information to analyze all specimens typed as to

the time which elapsed between the hour of collection and that of administration of the serum. Sufficient data are available to indicate that it is feasible for a physician in rural Minnesota to use the pneumonia service. For example: in specimens from ninety-six patients there was an average of forty hours and twenty minutes from hour of first symptoms to the hour the specimen was collected. In specimens from eighty-four patients there was an average of fifty-eight hours from the time of first symptoms until the hour type was reported by this Division to the physician. In specimens from seventy-six patients there was an average of sixty-nine hours from the time of first symptoms until the first dose of serum was given, i.e., under three days from time of first symptoms. Distance to some points was as great as 225 miles and the average was 125 miles. The above takes into consideration specimens received in the Main Laboratories. Actually this time has been considerably less in sections of the state tributary to our Branch Laboratory in Duluth, and Rural Health District No. 1, Bemidji, and No. 2, Man-kato.

Comment

From the above it is apparent that our knowledge pertaining to pneumonias is being changed. As it were, only yesterday we thought of the pneumococcus being truly significant in lobar pneumonias alone. The recent studies in pneumococcus typing have shown that the pneumococcus may be responsible for varying percentages of atypical or broncho-pneumonias and that the various types of pneumococci may have greater significance now and again, according to age, geographical distribution and season. Much continued, thoroughgoing study is necessary before the full significance of these multiple types of organisms can be finally evaluated. It

is only through the submission of specimens for type determination from all varieties of pneumonias that the facilities so recently brought to hand through scientific study can be utilized to the fullest degree. With this in mind it is urged that local laboratories as far as possible attempt the typing of pneumococci. It may be noted from Map 2 that a number of local hospitals and clinics are now carrying on typing. The Division of Preventable Diseases will continue to aid them, sending a trained bacteriologist to demonstrate typing procedures to laboratory technicians and to groups of physicians who are desirous of becoming familiar with this work. When it is realized that there are approximately 2,500 deaths from pneumonias of all kinds in Minnesota each year it is logical that the State Department of Health should exert every effort to aid the physicians in the reduction of these deaths. In a previous paper the collected results of the use of serum indicate that specific type serums, if administered early, at least by the end of the fourth day, are effective in markedly lessening the deaths and in shortening the period of illness. In order to bring this about we must act promptly in securing service and using the specific type serum. This stands as a challenge to the profession and the health authorities.

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THE DIAGNOSIS OF HYPERTHYROIDISM*

R. A. JOHNSON, M.D.

Minneapolis, Minnesota

THE classical symptoms and signs of a typical case of hyperthyroidism are so well known to you it would not be profitable to review them. These cases usually present little trouble in diagnosis. I shall discuss, rather, the diagnosis of atypical hyperthyroidism and emphasize the importance of the recognition of hyperthyroidism because the diagnosis is often missed from failure to think of the disease. Nearly all cases of hyperthyroidism are associated with an increase of basal metabolic rate, but, obviously, if the disease is not thought of, this test is not made and the correct diagnosis is not established.

The subject of atypical hyperthyroidism has been ably presented by Dr. E. Perry McCullagh and I shall follow him closely in my presentation. He points out that one source of difficulty is that other diseases may closely simulate hyperthyroidism, such as neurocirculatory asthenia, the nervous disturbances associated with menopause, loss of weight from obscure causes, and increases of the basal metabolic rate due to other causes than hyperthyroidism. Here hyperthyroidism does not exist, but is imitated.

We shall not concern ourselves with the diseases just mentioned but rather with another group of cases in which hyperthyroidism is actually present but difficult to recognize, because: (1) the signs and symptoms of the disease may be unduly prominent in one particular system and simulate a single system disease; (2) one or more of the important signs of hyperthyroidism upon which we rely for diagnosis may be absent; (3) the disease is complicated by some other condition which so dominates the clinical picture that the underlying hyperthyroidism is masked.

We shall now discuss in greater detail these various groups and take up, first, hyperthyroidism with signs related chiefly to one system.

Here the so-called thyrocardiac with predominant cardiovascular symptoms is the most common. We usually are dealing with an individual in middle or late life. Of 145 cases of hyper-

thyroidism past the age of sixty reported by Howard M. Clute of Boston, sixty showed either auricular fibrillation or congestive heart failure. Commonly it is a woman over forty years of age who has known about the presence for many years of a nodular goiter, or perhaps has no goiter, who presents herself because of attacks of fibrillation or, rarely, flutter. Perhaps a diagnosis of mitral stenosis has been made or there may be a frank cardiac decompensation or a complicating hypertension. We find the heart enlarged somewhat to the left, an accelerated rate, in many instances an impressive overaction with a thrill at the apex, loud snapping heart tones, a forceful thrust of the apex against the palpating finger, and a systolic murmur at the apex but no presystolic murmur indicative of mitral stenosis. The tendency to edema may be aggravated by a low serum albumin which is commonly found in hyperthyroidism. The basal metabolic rate is usually about plus 30 and a rate persistently at this level speaks strongly for hyperthyroidism as the principal cause of the cardiac disorder. The iodine response so characteristic in exophthalmic goiter is often not well marked. The present view of nearly all competent pathologists is that permanent structural change of the heart does not result from thyroid disease alone and that there is a complete restitution to normal integrity of the heart muscle after severe cardiac failure, in the event of cure. However, the term thyrocardiac expresses a useful practical clinical concept.

A less well known manifestation of hyperthyroidism, in the cardiac field, is the production of anginal attacks because the effect of the heightened metabolism and emotional reactivity is the same as the well known effect of physical exercise or emotional stress in an ordinary case of angina. The onset of hyperthyroidism then may be ushered in by anginal seizures.

The thyrocardiac constitutes, therefore, a most important group and must be thought of particularly in middle aged goiter bearing women who complain primarily of the heart. The goiter should then receive first consideration.

*Read at the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 4, 1937.

Next in the group with single system symptoms are those with excessively predominant neuromuscular manifestations which Lahey of Boston has described under the term apathetic hyperthyroidism. Here again the patients are in the older age group. They present themselves complaining principally of marked muscular fatigue and asthenia. Their appearance is one of apathy, of fatigue and exhaustion. There is a coarse tremor and often a gradual weight loss. They lack the activation, the look of anxiety, tension, excitement, and apparent emotional stress, so characteristic of hyperthyroidism.

Further, we may have patients presenting themselves with the picture of a gross error of metabolism. Here we find patients, often past middle life, with profound weight loss as the outstanding symptom, usually beginning insidiously and often reaching astonishing levels, as, for example, an elderly man with hyperthyroidism, now under my care, with a weight loss of eighty pounds. A weight loss of forty to sixty pounds is not uncommon. The probable reason for the inordinate weight loss is a failure on the part of an older individual to compensate adequately with increased appetite and excess food intake for the hyperthyroidism. If diabetes can be excluded, with this paradoxical reaction of a persistent weight loss in spite of a fairly good intake of food, the diagnosis of hyperthyroidism becomes fairly certain.

Again, outspoken exophthalmos may precede by several months any other well defined symptom. These are exceptional cases, for, although exophthalmos may come early in the course of the disease, other features are nearly always present to corroborate the diagnosis.

Lastly, gastrointestinal disturbances may dominate the picture and we may see the patient for the first time in a gastrointestinal crisis with nausea, vomiting and diarrhea with simulation of appendicitis or cholecystitis.

The next group of cases in which there is increased liability of error includes those with one or more important signs of hyperthyroidism absent. Instead of tachycardia, for example, the pulse rate in a few cases may be normal or nearly so, especially in men past mid-life, in a stage of remission. Or the normal pulse rate may represent actually a relative tachycardia in an in-

dividual with a normal bradycardia. An illustrative case was a male patient who showed a weight loss of sixty pounds, a moderately elevated basal metabolic rate but a pulse rate never over eighty-five. When the hyperthyroidism was corrected the pulse returned to his lifelong normal rate of fifty-six so that the rate of eighty-five during the active phase of the disease represented a considerable percentage increase—a relative tachycardia.

A goiter may be absent but if the other features of the diseases are well defined the absence should not negate the diagnosis. Increased size is not obligatory as there may be only an increased consistency of the gland or one or more nodules. Before concluding that there is no goiter, one must exclude the possibility of a substernal or subclavicular extension of an adenoma. The absence of a goiter, however, should lead to caution against designating the thyroid as the cause of the symptoms.

Again, there may be no increase of basal metabolic rate in hyperthyroidism. Many competent observers have agreed that such a condition may exist, especially in women past middle life in whom a nodular goiter has long been present. The late Roger Morris insisted that, if all the other standard features of hyperthyroidism were present, one should disregard the low basal metabolic rate and establish the diagnosis notwithstanding. However, if there be no goiter combined with no increase of basal metabolic rate, the chance of such a diagnosis being correct is about one in one hundred.

Weight loss may not be present. In fact, in younger individuals, a voracious appetite may over-compensate for the increased metabolism and the weight curve may rise instead of fall.

Errors are caused in a third group of cases because the hyperthyroidism is complicated by some other condition which dominates the clinical picture. Neurocirculatory asthenia with the characteristic symptoms of nervousness, fatigability, weakness, and palpitation of the heart, causes much confusion and especially if a goiter is present.

The tell-tale badge of neurocirculatory asthenia is the cold, wet, clammy hands and feet, sometimes cyanotic, in contrast to the warm and lusty peripheral circulation of hyperthyroidism. There are also greater variability of the pulse

rate and an obvious neurotic attitude. The presence of a cold, moist hand in itself practically rules out hyperthyroidism. If hyperthyroidism develops in an individual with neurocirculatory asthenia one notes a changed facial expression, a persistently high systolic blood pressure, a persistent tachycardia at rest, a vigorous heart thrust, warm hands, and an increase of basal metabolic rate above plus 20 as contrasted with a less elevated basal metabolic rate usually observed in neurocirculatory asthenia. One must be prepared, however, for disappointments from operation in this group as, when the hyperthyroidism is corrected, the substratum of neurocirculatory asthenia remains.

We have time left to mention very briefly only the psychoneurotics which Boothby has discussed so ably. Here is the individual with an inferiority complex, terribly self conscious, overly

conscientious; his entire life guided by public opinion. His somatic reactions are basically those of fear with the characteristic anxiety, nervousness, tremor, tachycardia, and sweating seen in fright. To distinguish these cases from hyperthyroidism the two most important findings are the absence of weight loss in spite of an increased basal metabolic rate and the absence of an increased sense of warmth. There is no need of a hasty diagnosis in these cases and one of the best safeguards is repeated basal metabolic rate determinations. One frequently sees markedly increased metabolic rates in the earlier determinations but after the patient loses his apprehension and becomes accustomed to the test, there is a progressive decline in the rate of successive tests, to normal or subnormal levels. This is an exceedingly useful maneuver in ruling out hyperthyroidism.

THE SURGICAL TREATMENT OF HYPERTHYROIDISM*

MARTIN NORDLAND, M.D.

Minneapolis, Minnesota

THERE is no disease and no situation in surgery where the decision for the time of the operation and the selection of the proper procedure is so dependent upon a large experience and the good judgment of the operator as in the cases of patients with severe hyperthyroidism. In other branches of surgery, including simple nodular goiter, the successful outcome of the operation is almost entirely dependent on a good technic and proper asepsis. The operative mortality in adenomatous goiter with hyperthyroidism is mainly dependent upon the condition of the heart and kidneys or the presence or absence of some other constitutional disorder. Acute hyperthyroidism affects individuals and the various age groups so differently that adherence to a meticulous technic and a good asepsis is not always sufficient to save the patient from death. Serious thyroid reactions or crises which are frequently responsible for death in these severe cases are distinctly lessened by multiple stage operations.

The majority of the patients with hyperthyroidism who present themselves for treatment, can, with proper preliminary medical preparation, be subjected to a primary subtotal thyroidectomy. Nevertheless, every surgeon who deals with cases of hyperthyroidism is familiar with the patient who, in spite of all measures to improve his condition, fails to improve or even becomes worse. This is the type of patient who, no matter how great the risk, must be subjected to some sort of procedure which may at least temporarily check the progress of the disease. In the cases of severe hyperthyroidism, the factors which make a multiple stage procedure necessary may be divided into two groups, those to be considered before the operation and those which are present at the operation.

The preoperative use of Lugol's solution is a most valuable agent in the treatment of this disease. It must be understood, however, that the beneficial results of medical treatment alone are at best but temporary and that the drug treatment should be followed within a relatively short time by proper surgical procedures. The max-

*Read before the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 4, 1937.

imal results derived from the administration of iodine are usually obtained in from ten to fourteen days, but in some cases a period of three weeks is required. A second or even a third remission may be produced with iodine but each one, after the first, is brought about with much more difficulty and is less complete than the first. According to Reinhoff, operation as soon as the first remission is established offers the best prognosis, and once this golden opportunity is allowed to slip away another such remission can be obtained only with great difficulty, if at all.

It is an accepted fact that about 5 per cent of patients with exophthalmic goiter cannot be made satisfactory surgical risks by the prolonged medical treatment. In this group a two-stage operation is clearly indicated. A preliminary ligation of one or more of the thyroid arteries as formerly done by Kocher will so improve the patient's condition that the gland can be resected later without the danger of an acute reaction. He believed that "by ligation of one artery there is an amelioration of the patient's condition. If two are ligated, the amelioration is greater. If to this we add the removal of one lobe, the amelioration is still greater. Ligation of all four vessels will very rarely suffice to cure the patient who is seriously ill with exophthalmic goiter." Therefore, in the above type of cases as well as the patients in the most extreme states of hyperthyroidism, ligation should be employed always with a view to improving the patient's condition so as to permit a subtotal thyroidectomy to be more safely performed later.

The interpretation of the basal metabolic estimation is an important factor. In recent years too much emphasis has been placed upon the value of basal metabolic observations. While the metabolic estimation is in general a quite accurate indication of the degree of thyroid toxicity, it can be extremely misleading and unreliable as a criterion of operability. Its value in the diagnosis and treatment of thyroid disturbances is most important only when the reading is extremely high. In cases with the basal metabolic rate only slightly higher than normal other diagnostic signs are of more value. One of the most positive evidences of hyperthyroidism and the most dependable in adults particularly is tachycardia. Almost as dependable is

weight loss and the least dependable evidence of intoxication is basal metabolism interpretation. A patient with a relatively high basal metabolic rate who is gaining weight is a better operative risk than a patient with a considerably lower basal metabolic rate who is losing weight. When, in spite of a good food intake, there has been a marked loss in weight and when, in spite of an attempt to increase weight during the pre-operative preparation, the patient still loses weight, preliminary pole ligation must be considered the procedure of choice.

On the operating table, in the interpretation of tachycardia in patients with hyperthyroidism, it should be remembered that there is usually a preliminary rise in pulse rate as a result of the anesthesia induction. Opinion should be delayed as to what the average pulse rate truly is until the patient is well past the stage of anesthesia induction and well under the anesthetic. We find gas (nitrous oxide or ethylene) the ideal anesthetic for patients with marked hyperthyroidism. Nervousness in the patient is thus avoided and better relaxation obtained. With the elimination of the psychic factor, we are better able to judge the condition of the patient as indicated by the pulse rate and thus determine the extent of the operation. When there is a persistent high pulse or an increase in rate of the heart beat under gas anesthesia, a multiple stage operation must be considered. Decisions for or against multiple operations may arise during the operation when any technical difficulty such as an excessive amount of bleeding occurs or when an unusual amount of time is employed in removing the first side. With any complication which renders the operation unusually difficult, it would be well to err on the side of conservatism, risking a second operation rather than the patient's life.

There is an important factor which does at times unfavorably influence decisions to perform multiple stage operations in severe cases. The surgeon realizes that he is going to put this patient through two or three stage operative procedures. He is aware of the fact that the patient and his family will be disappointed and possibly critical. He is further conscious of the fact that it involves a longer time from home and an increased expense because of the prolongation of the hospitalization. Lahey asserts

that "sentiment for the patient and a desire on the part of the surgeon to save the patient time and money have cost many a patient his life and has no place in the decision for or against multiple stage operative procedures in a patient sick enough from hyperthyroidism to have the question of multiple stage operation raised. After all, if the patient survives a pole ligation, he will survive, in practically all instances, a right subtotal thyroidectomy and then a left subtotal thyroidectomy and his living presence and improved condition will be convincing evidences that easily outweigh any arguments which may be made against the soundness of this position."

Efficient hemostasis is most important in thyroid surgery, particularly in hyperthyroidism. For better hemostasis and because of the greater safety to the recurrent laryngeal nerves and the parathyroids, we apply a ligature to the inferior thyroid arteries, extrafascially, before proceeding to the excision of the gland. We always ligate one inferior thyroid artery and both superiors in non-toxic and mildly toxic cases. We ligate all four arteries in severely toxic cases. In the surgery of severe hyperthyroidism, speed and gentle handling of tissues are important factors. Care should be taken to make a thorough removal of the gland so as to leave only a small portion in the esophago-tracheal groove. This will best prevent persistent or recurrent hyperthyroidism.

The cause of recurrent symptoms following operations for exophthalmic goiter has not been fully explained. Various theories, as well as carefully conducted studies along this line, have been reported, but as yet no satisfactory reasons have been established, why in occasional instances recurrence of hyperthyroidism takes place at various intervals following thyroidectomy. It is true that in many cases incomplete removal of the gland, such as in hemithyroid-

ectomy or in instances in which retrotracheal extensions are overlooked, accounts for the recurrence of the symptoms, yet there remains a certain definite group of patients in which minimal amounts of gland tissue are preserved and yet return of symptoms is noted.

Classification of these recurrences, therefore, can readily be made on the basis of whether the previous removal of the gland was adequate or inadequate, and of course the proper treatment in the latter type of case is prophylaxis. This consists in a thorough removal of the gland, including the isthmus and also the pyramidal lobe if present, leaving only a thin layer on the posterior capsule and taking care to locate and resect any retrotracheal extensions. This procedure will prevent most, but not all, recurrences.

The amount of gland to be left at operation obviously cannot be estimated to a very exact degree. If this were necessary, then good results from thyroidectomy would be few and far between, because the surgeon would have to possess either extremely accurate methods to judge this amount or he would have to have great intuition to know how much tissue was to be preserved. In other words, most cases of thyroidectomy would result in either postoperative myxedema or persistent hyperthyroidism unless a very definite exact amount of tissue were left behind.

It is now conceded that the most efficacious method of treatment of exophthalmic goiter is one which combines both medical and surgical measures. Alone, either will be found inadequate for the great majority of cases. They call for constant and closest coöperation between the internist and the surgeon. The consensus of opinion to date is that the greater majority of patients with hyperthyroidism should first have a period of medical treatment and later be subjected to operation.

X-RAY TREATMENT OF EXOPHTHALMIC GOITER*

ADAM M. SMITH, M.D.

Minneapolis, Minnesota

DIFFUSE hyperplasia of the thyroid is the reaction of the thyroid to some outside stimuli which, at the present time, have not been discovered. This may be due to a deficiency of some kind, that is, the effect of an antithyroid hormone, or may be due to an over-abundance of a thyrotropic hormone. The reasons for this conception are that the physiological manifestations of exophthalmic goiter can be produced in animals only by injecting the thyrotropic hormone of the anterior pituitary gland while those of toxic adenoma can be produced by the use of thyroid extract. Pathologically, the areas of hyperplasia and lymphocytic infiltration in exophthalmic goiter are diffuse throughout the gland while in adenoma the hyperplastic areas are circumscribed and well defined. Clinically, an exophthalmic goiter is frequently accompanied by a typical facial expression with eye stare and exophthalmos which are not present in toxic adenoma. Also there are remissions and exacerbations in exophthalmic goiter while in toxic adenomas the symptoms are progressive.

The object in all methods of treatment of exophthalmic goiter, medical, surgical, or x-ray, is the removal of the new hyperplastic tissue. In the medical treatment this is obtained by the use of Lugol's solution which causes a restorage of colloid material with the filling of the acini. This causes pressure on the small blood vessels with a resultant diminution of the blood supply to the hypertrophic tissues and a cessation of symptoms and drop in the basal rate. Surgery obtains the same ends by a subtotal thyroidectomy, that is, a surgical removal of both normal and hyperplastic thyroid tissue.

Young hyperplastic tissues and endothelial cells are extremely sensitive to roentgen rays while normal adult tissue is fairly resistant. In the x-ray treatment of exophthalmic goiter the gland is exposed to heavy doses of x-ray and the hyperplastic tissue and the endothelial cells in the rapidly developing vascular system are de-

stroyed, leaving the normal thyroid tissue practically intact.

In x-ray treatment of this disease, it was first thought that repeated small doses of x-ray would cause a cure. Now the treatment consists of giving heavy doses at close intervals, every other day, for four treatments, the total amount given in a course being between a 120 and 130 per cent skin erythema dose. After this, the patient receives no more treatments for six weeks when a second course is given, which is similar to the first. Only exceptionally a third course need be given three months following the second.

After the treatment, there is usually a drop in the basal rate to within normal limits and an amelioration of the symptoms. In some cases, the basal rate does not follow the clinical improvement, but does drop after the second course. After the second course there is apt to be a tracheitis and painful swallowing, which appears about the fifth day after the treatment; this usually responds to heat rather than cold. There is also some nausea due to the absorption of the rays. In two hundred and fifty cases there has been only one case that developed slight petechia.

A recent check up on the cases that have been treated, two to ten years after treatment, showed the following results in one hundred and eight patients who replied to a questionnaire.

Percentage of cases	Percentage recovered
55	100
1	95
6	90
2	80
14	75
22	less than 75

Recovery less than 75 per cent is considered unsatisfactory. By recovery is meant the portion of the normal amount of work and also percentage of outside activities that patients are doing, that is the per cent of their normal life that they are living.

Of the group of unsatisfactory results, five patients were operated upon. One patient being very blond was unable to receive the proper

*Read before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 4, 1937.

x-ray exposure on account of the skin reaction. In one case we were unable to control symptoms which, after a short remission, would all return again. Three patients were operated upon elsewhere after receiving marked benefit from the first course of treatments.

These results are approximately the same as those given by the surgical department at the University of Minnesota, in 1935.

In our series, we had no case of crisis, no mor-

tality that we could determine, no recurrent nerve injury and no parathyroid involvement.

Conclusion

X-ray treatment of diffuse hyperplasia of the thyroid is safe, it is economical, it is accompanied by very few complications and the end results are practically the same as following thyroidec-tomy.

ACUTE APPENDICITIS*

J. F. NORMAN, M.D., F.A.C.S.

Crookston, Minnesota

IN attempting to present a paper on acute ap-pendicitis, one is confronted with a great mass of literature on the subject, some hundreds of papers having been presented during the last five years. This alone would indicate that the subject is a live one and that the profession is not satisfied with results as they are today. There were 327 deaths from appendicitis in Minnesota in 1936. This would mean some 10,-000 cases for that year. Eighteen to twenty thousand lives are lost from this cause annually in the United States.⁸ Any disease which causes such loss and which causes a half million people serious illness deserves continued study. While most diseases have shown a decrease in mortality, that from appendicitis has shown an increase until recently. Four times as many people die from appendicitis as from cancer before the age of fifty years. Deaths from appendicitis equal all those from salpingitis, pelvic abscess, surgical diseases of the pancreas, spleen, thyroid, gall-bladder, gastric and duodenal ulcers.⁴ The mortality rate of 17.4 per 100,000 in 1931 showed a marked increase over fifteen years ago. This increase was present in spite of a lowered mortality for early cases and better hospital care.

It would seem that the study of this condition should try to fix the responsibility for this high mortality rate. This would mean education of the public to the danger of delay in any case of pain in the abdomen, and that the taking of a cathartic for pain in the abdomen may be dan-

gerous treatment. The public should be taught to call a physician early and not after home remedies have been tried. A surprising number of these patients will state that they thought the condition could not be appendicitis because the pain was not in the right, lower abdomen. Bowers did much to lower mortality in Philadelphia by such information being given wide publicity.¹

It would be well for the profession to review this subject as it has not been in agreement as to the treatment of the case of appendicitis seen late, though it is agreed that immediate operation is the only treatment for the one seen early. Bowers reports that fifty-one physicians of Philadelphia, in 1932, prescribed cathartics in the presence of acute abdominal pain followed by four deaths due to acute peritonitis from ruptured appendices. The management of the case postoperatively is well standardized. The review courses now being put on by the University of Minnesota may help the physician who sees the case first in making a diagnosis.

A brief review of the care of this disease in a city of 6,000 with surrounding small town and agricultural population of about 40,000 may be of interest. There are other hospitals in this territory so that the report for Crookston will include only a certain proportion of the cases in this area. There are two hospitals of a fifty-bed capacity, each fully approved by the American College of Surgeons. This report will be one of hospital cases rather than those of any one surgeon.

*Read before the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 4, 1937.

CASES OF ACUTE APPENDICITIS

Cared for by members of the Staffs of St. Vincent
and Bethesda Hospitals, Crookston, Minnesota
1932-1936

Year	Cases	Simple	Ruptured	Deaths
1932	50	27	23	2
1933	59	33	26	3
1934	41	22	19	0
1935	83	51	32	2
1936	81	57	24	3
Totals	314	190	124	10

From 1932 to 1936, inclusive, 314 cases of acute appendicitis were cared for by the hospital staffs. Of these 314 cases, 190 were clean and there was no death in this group. This nonruptured group included gangrenous cases and those with more or less plastic exudate, cloudy fluid, and evidence of local peritoneal inflammatory reaction. One hundred twenty-four appendices were found to be ruptured at the time of operation. This proportion is surprisingly large as compared to other published reports. This may be partially explained by the fact that, in 1936, out of twenty-four ruptured cases, eleven, or almost half, were admitted with a history of forty-eight hours' illness and that six (25%), of the whole number of ruptured cases, entered with a history of six days' illness. This may be partly explained by the fact that some of these patients were away from good roads in winter and that many tried home remedies. Of these 124 ruptured cases there were ten deaths, a mortality of 8 per cent plus. The mortality for the entire series was 3.1 per cent.

CASES OF ACUTE APPENDICITIS

Of the ten deaths during the five-year period (1932 to 1936), six were due to general peritonitis or secondary abscess. One occurred in a bed patient with rather an advanced pulmonary tuberculosis in whom the abdominal condition was thought to be tuberculous peritonitis. Later, a large abscess was drained, apparently arising from the appendix. There was no postmortem.

One patient, a woman forty-four years of age, had not seen a physician for a year. She gave a history of weight loss, sleeplessness and nervous-

ness during this period. She developed an acute attack of abdominal pain in the morning and was operated before midnight with drainage of pus. Her pulse was rapid at operation, continued up to 180 and even to 200 within twenty-four hours. Her face was flushed, temperature elevated, and blood pressure high. She lived about two days and appeared much like a patient with thyroid crisis. There was no evidence of bleeding or of embolus, and no symptoms of heart dilatation. Iodine was given per rectum. Autopsy showed a normal abdomen and chest. Death was probably due to a thyrotoxicosis.

One was a patient sixty-two years old, a woman with a history of ten days' duration. A large localized abscess was drained and nothing else attempted. The heart was irregular and râles were present in the chest soon after operation. Death was due to bronchopneumonia and sepsis. The abdomen drained profusely with no evidence of general peritonitis.

A man thirty-six years old had had a high appendiceal abscess treated a year before. He was a jail patient at the time of the present attack. Another high appendiceal abscess was found at operation. The appendix was removed. Death from a subphrenic abscess followed a long period of sepsis.

A study of the records of any such series will demonstrate the fact that the mortality is higher for the cases which are seen late following home treatment, including one or more cathartics. It may also be stated that the mortality of the cases which come in forty-eight to seventy-two hours after the onset of the disease was about three times that of those seen in twenty-four hours, while the mortality when seventy-two or more hours had elapsed was four times that of the twenty-four hour cases. The problem in these perforated cases ceases to be that of appendicitis; the surgeon has a case of peritonitis or abscess to care for. Some of these had been seen by a physician who, because of atypical symptoms and findings, advised watching. Often he was called two or more days later to find rupture had occurred. It would seem that the physician who first sees the patient should insist on having him completely under his control, seeing the patient frequently. It is a question whether even the use of an ice bag in the patient's home is advisable as it might be anesthetic enough to carry the patient

over into the more dangerous phase of the disease.

The question of diagnosis can only be touched upon here. Pain in appendicitis is the one constant symptom and may be anywhere in the abdomen. The sequence of pain followed by vomiting is present in some 50 per cent of the cases. A leukocyte count of over 20,000 should warn one to have other conditions in mind. Very important is the increase of polynuclears. A child with suspected acute appendicitis should have an x-ray of the chest. If one waits for the classical symptoms of localized lower right abdominal pain with right rectus spasm and extreme tenderness, one is likely to have perforation or gangrene develop. The pelvic type of appendix seems to be one which causes delay.

The patient seen within twenty-four or even thirty-six hours of the onset should be operated upon at once. The profession is agreed as to this treatment. This removes the focus of the disease and convalescence is uneventful as a rule. The mortality will be less than one per cent. When the patient presents himself after the second day the problem is a major one. In some the process will be mild or subsiding. These cases are not so important from the standpoint of mortality. The patient coming in at this period with very definite spasm or a palpable mass presents one of probable local peritonitis although some will have formed abscesses. At this point the profession is divided as to treatment. There is a choice of two procedures; either operation at once or expectant measures. The condition is now one which may mean an extremely difficult operation. There is marked friability of the tissues with much bleeding. The operative mortality is high at this period. Love reports a mortality of 13.7 per cent in 168 cases operated upon in the period from the third to the fifth days, inclusive, in London Hospital.

If one decides to wait and defer operation, the problem is a hard one for the surgeon in the smaller centers. Many physicians and many of the laity have been educated to the opinion that the diagnosis of appendicitis should mean immediate operation. If the surgeon in the small city defers operation and loses a patient, or if he waits and later has to give up expectant treatment, he is criticized for having done nothing. He may have a doubt in his own mind. If he is

masterful, operates at once and loses a patient, he will be considered as one who has done everything possible. Love⁷ states that with the expectant treatment one of three things will occur: (1) about 70 per cent will recover; (2) an abscess will form in about 25 per cent of cases, which does not make the case an emergency one (mortality of the abscess cases, 4.5 per cent); or (3) expectant treatment may have to be abandoned (mortality 6.4 per cent). The average mortality is under 3 per cent with expectant treatment. Dixon⁵ states that where there is evidence of perforation having occurred within the last ten or twelve hours or if rigidity and localization are confined to the right lower quadrant, operation should be deferred for at least five or six days.

Now that the decision is made to operate, the question arises as to what should be done. The early case presents no problem as immediate appendectomy is the only treatment. This removes the disease condition and the case is under control. The profession is not agreed as to type of treatment for the ruptured appendix or abscess. It would seem logical that if the appendix is free, or can easily be freed from recent adhesions, that appendectomy should be carried out, and that the patient would not be endangered by gently freeing the appendix and ligating the base and meso-appendix. If the appendix is found buried in an abscess wall, often retrocecal with friable, granular tissues and a marked tendency to bleed, the problem presented is a major one. It would seem logical to avoid tearing up such tissues to free a buried appendix, and this very procedure may have added somewhat to the mortality of 1935 as compared to that of 1915, when surgeons were content to drain and nothing more. One is unable to decide this matter from published statistics as good operators of much experience have good reports with either form of treatment. It is possible that in the smalltown hospital it would be advisable to be more conservative in these cases.

The question as to drainage is a very important one. There is a decided tendency to drain less often in the case where the focus of infection can be removed. Cafritz³ has recently reviewed this subject. He states that a questionnaire to leading surgeons of the country brought back twenty-five negative answers, seven positive

replies and seven answers with reservations. This problem would furnish material for a very complete paper in itself. One can only state that the trend is decidedly to drainage of fewer cases. It is claimed that with no drainage, that fewer secondary abscesses will result and fewer bands of adhesions to cause obstruction. It would seem safer to drain in the case where the primary focus cannot be removed, where there is much necrotic and contaminated tissue left in the abdominal cavity, or in the presence of a walled off abscess. Drainage is being done less often in our local hospitals but the ruptured and abscess cases are being drained. Ileostomy is being used less since the Levine tube, with or without suction, has come into general use. It is possible that cecostomy through the base of the appendix as advocated by DeCourcy may be of value.

The postoperative care of appendicitis today is so improved that many patients are being saved who formerly would have been lost. There is a hope expressed that during the last couple of years there has been some improvement in mortality. If so, improvement is due more to postoperative care than to the type of operation. In the small hospital this means rather close supervision by the surgeon. At present the head of the bed is raised somewhat, though no attempt is made to approach the real Fowler position unless the patient feels more comfortable with his head raised. Sufficient morphin is given for the first three days to reduce peristalsis and to quiet the patient. Subcutaneous saline is given to all patients and in drainage cases glucose is administered intravenously. Later small doses of morphin will add tone to the intestine. In a certain number of cases the Levine tube is used, sometimes with suction. In severe cases blood

transfusions are given. The colon tube may be used, but in the average case the colon is not disturbed for three days. It is hard to see how enemas can be of much value the first couple of days. The simple case is given fluids and food early, the patient being out of bed on the seventh to tenth day, leaving the hospital when he feels able. When drainage has been instituted the patient is observed at intervals for postoperative hernia.

Conclusions

1. The greatest single factor to account for the high mortality in appendicitis is delay in operation.
2. The patient is responsible for this delay in the great majority of cases, self-treatment, including cathartics, adding greatly to the danger. An educational campaign might reach such persons. Articles in health magazines such as *Hygeia* and *Everybody's Health* reach many.
3. The physician who first sees the patient with appendicitis is in a great measure responsible for the outcome. It is his responsibility to see that the patient enters the hospital where proper examination can be made. The surgeon should feel justified in doing an exploratory operation in the doubtful case.

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CASE REPORT

LOBAR PNEUMONIA OF THE AZYGOS LOBE

W. N. GRAVES, A.B., M.D.

Duluth, Minnesota

THIS case is presented to prove further the dictum that the azygos lobe of the lung is heir to any pathologic condition which may affect the other lobes.

Resolution was observed fluoroscopically and a second plate made November 2, 1936, showed clear lung parenchyma above the azygos sulcus (Fig. 2).

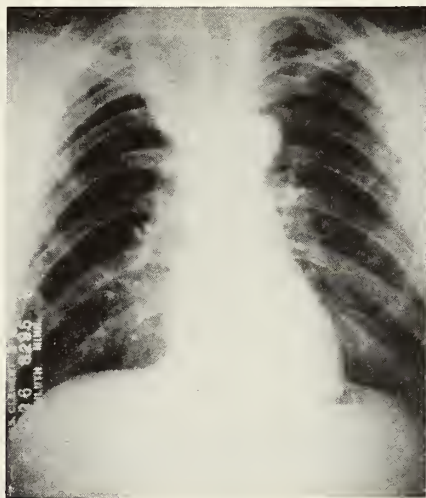


Fig. 1.

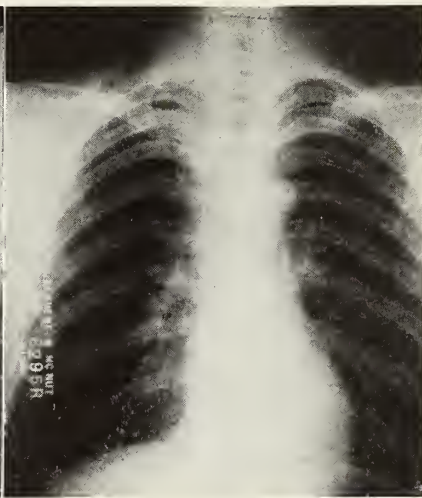


Fig. 2.

E. J. McM., a male, twenty-seven years of age, was taken ill September 10, 1936. The onset was sudden while at his office, with a mild chill followed by malaise and pain in his right chest. He immediately retired to his bed and soon developed a cough which was mildly productive. His temperature, as taken by his wife, was 101 degrees F. I was called to see him two days later because his symptoms remained unchanged. His temperature was 101.6 degrees F., pulse 100, respiration 20, blood pressure 122 mm. of mercury systolic, 86 diastolic. His chief complaints at this time were malaise, cough, and soreness in the right chest above the nipple region. No changes were noted in the examination other than a few moist râles which were heard at the bases of both lungs posteriorly. He was treated symptomatically and showed no change in the findings until the fifth day after the onset, when his temperature suddenly became normal and he noted general improvement of all symptoms. Examination made two days later at my office showed practically normal findings both physically and by laboratory tests. Stereoscopic x-ray plates were made of the chest, which showed consolidation of the azygos lobe (Fig. 1).

EDITOR'S NOTE: It is interesting to note that the standard anatomies give little or no information as to the azygos lobe of the lung, although it was first described in 1778 by Wrisberg. Some twenty-three cases which had been reported in the literature were reviewed by Stibbe in 1916. In 1923 Wessler and Jackes first drew attention to a comma-shaped shadow near the right lung apex, occasionally seen in anterior-posterior chest x-rays, but the significance of the shadow was not known until Wessler and Bantick, in 1928, checked the shadow in two cases at autopsy and proved it was due to an anomalous course of the azygos major vein. It is estimated that in about one in 1,000 individuals the azygos major vein, instead of closely adhering to the vertebral column as it curves forward to join the superior vena cava, swings away, carrying with it a fold of parietal pleura. This partitions off a small portion of the right upper lobe along its mesial surface, which communicates below. The vein and pleural layers account for the comma-shaped shadow where the azygos vein joins the superior vena cava and the fine line with its convexity outward, which is visible in the x-ray plate in these cases. Pneumonia involving this lobe is nicely shown in the accompanying report.

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BUSINESS MANAGER

J. R. BRUCE

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Periarteritis Nodosa

PERIARTERITIS nodosa is a rare disease but since it was first described more than sixty-five years ago by Kussmaul and Maier, it has always been a source of interest both to the clinician and the pathologist. The clinician's interest is usually aroused because the patient presents a picture which is obscure and the interest of the pathologist is usually stimulated because in a lifetime, he has relatively few opportunities to study cases of his own.

The etiology of the disease is unknown. It has been suggested that the condition represents a specific infectious disease of bacterial or virus origin. No organism has, however, been isolated from human cases with any consistency, and while ground material from human nodules injected into rabbits has produced suggestive

lesions, this work has not been conclusive. In support of a possible virus etiology is the fact that the disease has been described in deer and swine. Certain authorities consider it an allergic manifestation of rheumatic disease. The fact that the lesions are vascular and resemble slightly experimental allergic inflammation, a possible protein sensitivity basis has been considered though its association with asthma is too infrequent to have any significance.

Pathologically the disease is characterized by the formation of inflammatory nodules on arteries the size of the coronaries or smaller. The nodules vary from one to five millimeters in diameter and are situated eccentrically or at the bifurcations. Large vessels and capillaries are spared. The lesion begins as an accumulation of inflammatory cells in the adventitia and progresses to involve all vessel coats. The inflammation consists of polymorphonuclear leukocytes, lymphocytes, plasma cells, and eosinophiles. Eosinophiles may predominate and be the characteristic cell of the lesion. Where the process has destroyed the muscle and internal elastic membrane of the vessel, small aneurysms and thromboses form. The damage secondary to these vascular lesions produces the picture seen at autopsy. This is usually one of hemorrhage or infarction. While the disease is always fatal, it sometimes has a chronic course and the lesions are known to heal by fibrosis. The disease is wide-spread throughout the body and any organ may be affected. Bearing this in mind the protein nature of its clinical manifestations is better understood.

The fact that the clinical picture is so bewildering can be explained when it is considered that we are dealing with an infectious process producing a systemic reaction characterized by prostration, fever, tachycardia, cutaneous eruptions, and leukocytosis, in addition to the wide-spread damage done by the vascular lesions described above. (Harbitz). For convenience the disease is sometimes classified into six types: gastrointestinal, renal, neuro-muscular, cardiac, cerebral, and cutaneous. The outstanding clinical characteristic of the disease is the fact

that the severity of the symptoms is out of proportion to the findings the examiner is able to elicit and the location and severity of these symptoms is dependent on the organ involved and the degree of vascular damage. When the intestine is attacked, the picture may resemble an acute inflammatory condition in the abdomen and many patients have been operated upon for acute appendicitis, the real nature of the disease being revealed by histologic study of the appendix. The kidney may be involved and the damage may be sufficiently wide-spread to cause renal insufficiency or massive hemorrhages may occur in the retroperitoneal tissues. The neuromuscular type of the disease may be mistaken for rheumatism or neuritis of various forms. Cardiac lesions are found in a high percentage of cases. These may range from simple nodules on the coronary vessels to hemopericardium and infarction of the auricle or ventricle. Central nervous system involvement is considered rare but massive cerebral hemorrhages have been reported. Skin lesions are not infrequently seen. These present themselves as nodules, a macular rash, hemorrhage, or even necrosis. Biopsy of the skin lesion may establish the clinical diagnosis. The correct clinical diagnosis in the reported cases is said to have been made (Spiegel) in only 12 per cent of the cases.

J. F. U.

The Women's Field Army Program And The Physician

AFTER a year's experience in nearly forty states the Women's Field Army Against Cancer of the American Society for the Control of Cancer is extending its work into practically every state. This program is unique in the history of health education movements in that *from the beginning* the medical profession has been asked to direct the work. In every state lay leaders have been appointed only with the approval of medical organizations.

In this Women's Field Army plan lay speakers are discouraged from speaking on the scientific aspects of cancer. This phase of the program has been placed in the hands of physicians in the belief that a physician is the properly qualified person to discuss this subject before lay

groups. The activities of lay workers are restricted to organization and other problems. It is thus seen that the program is being developed along lines most favorable to the physician. By this same token there is placed on the physician the responsibility of making the program as effective as possible.

The program is built around the fact that early cancer is curable, and to detect it in early stages the periodic examination of the apparently well individual must be employed. As a result of the public discussion of this subject thousands of persons for the first time have sought examination by their physician to determine the presence or absence of cancer. As the program develops thousands more will ask for this same service. This makes it essential that physicians be on the lookout for precancerous lesions as well as signs of early cancer, and conduct these examinations in as thorough and painstaking a manner as possible. A patient requesting such an examination is entitled to the best service the physician can give, regardless of objective absence of disease. After obvious signs of cancer appear it is often too late to render a curative service; therefore, no physician should make light of any patient's request for an examination.

No physician should hesitate to avail himself of facilities for obtaining the answer to the patient's problem when such facilities are not at his immediate disposal. The diagnosis and treatment of cancer is a group problem, and no physician has the ability alone to cope adequately with all forms of the disease.

One criticism emanating from medical sources is that a lay cancer educational program will create a cancerphobia in the public mind. In answer it should be remembered that an intelligent request for information about cancer is not cancerphobia; also, that cancerphobia never metastasizes and never kills.

Another criticism coming from a few laymen is that this emphasis on periodic examinations is but a dodge on the part of the medical profession to increase its income. Such criticism should not be taken seriously, and should be answered by pointing out that only by early diagnosis and treatment can the cancer patient be saved from an untimely death. If the profession wanted to profit from this situation it

could do so in far greater measure by neglecting the early stages of cancer knowing that the care of the incurable patient would be far more prolonged and remunerative.

With this opportunity for constructive participation in a nation-wide health education movement the physicians of Minnesota should see to it that no patient is denied the fullest measure of service within the power of physicians to render. Only by such a service can they expect to retain direction of this program.

—F. L. R.

Principles And Proposals of the "Committee of Physicians"

THE presumption of the self-styled Committee of Physicians to advocate as individuals fundamental changes in medical practice has rightly aroused a wide-spread feeling of indignation in the ranks of the profession. The worst feature of the declaration of Principles and Proposals of the Committee is the impression given the public and commented upon editorially in the press that there is a widespread revolt against the action of the House of Delegates of the American Medical Association at Atlantic City.

In the first place the 430 signers of the Principles and Proposals of the Committee of Physicians, although numbering prominent members of the profession, constitute less than half of one per cent of the members of the organized profession, and their advocacy of increased governmental participation in medical practice cannot be construed as the viewpoint of the profession at large. Many of the signers of the declaration hold positions which would be glorified by the proposed radical departure from the present practice. Many signed without mature deliberation and because they were asked to do so. Many have already retracted.

The American Medical Association composed of some 106,000 physicians is the body which should formulate the policies of the profession and any difference of opinion should be expressed within the organization and not without. The sum and substance of the Principles and Proposals of the Committee of Physicians was presented to our national House of Delegates at

its last meeting and was overwhelmingly rejected. A nationwide campaign in the public press was then decided upon by the proponents of these so-called principles and this group of physicians coöperated by permitting the publication of their names, and their professional attainments. Actions such as this cannot be too heartily condemned by our profession. We predict that this effort, originating outside the profession and sponsored by a few inside, will strengthen the position of the organization.

DEATHS FOLLOWING ELIXIR SULFANIL- AMIDE-MASSENGILL

Nine out of ten patients who had been given a proprietary elixir of sulfanilamide died recently in Tulsa, Okla., from anuria which apparently resulted directly from poisoning by this elixir. Subsequently there was received a report of four additional deaths, with another likely fatality in East St. Louis. The product was prepared and sold by the S. E. Massengill Company of Bristol, Tenn. From tests by the chemical laboratory of the American Medical Association, this elixir appears to be a solution of approximately 40 grains of sulfanilamide to a fluidounce of a menstruum containing about 72 per cent of diethylene glycol (by volume) with flavoring. The solvent, diethylene glycol, is itself not an indifferent substance. The dosage of the elixir administered unquestionably contained a large amount of this substance. It would appear to be clear that the diethylene glycol or the diethylene glycol-sulfanilamide combination rather than the sulfanilamide was responsible; one of the patients had received tablets over a period of two weeks without any bad effects and then showed the typical train of symptoms after taking the elixir. From twenty-four to forty-eight hours after administration of the substance, nausea, vomiting, malaise and sometimes diarrhea developed; then complete anuria appeared within two to five days. The laboratory of the American Medical Association is conducting careful chemical and pharmacologic experiments to indicate the toxic factors of the elixir concerned. This tragic experience should be a final warning to physicians relative to the prescribing and administration of semisecret, unstandardized preparations. The Council on Pharmacy and Chemistry has not accepted any stock solution of this substance. It has accepted a sufficient number of preparations developed by manufacturers to supply the needs of the medical profession for this substance in the present state of our knowledge. Acceptance by the Council indicates that the products have been examined and that there is sufficient clinical evidence relating to their use to indicate at least their safety when prescribed in the designated manner. (J. A. M. A., Oct. 23, 1937, p. 1367.)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.
A. N. Collins, M. D.

Doctor Fishbein Speaking

DR. Morris Fishbein came to the Twin Cities to make the principal address for the Minnesota Public Health Association's Annual banquet at a time when momentous things were happening in American Medicine.

Doctor Fishbein, both as spokesman for the American Medical Association and as a keen observer on his own account, knows more about these matters than any man in America.

Out of two full days spent in Saint Paul and Minneapolis he took time out only for the Northwestern-Gopher Homecoming game. Otherwise, breakfasts, luncheons, dinners and midnight parleys were continuously occupied in talking to interested doctors—or to large public groups.

Highlights

Here are highlights of what Doctor Fishbein told two groups at breakfast, Friday, November 12, and Saturday, November 13. The Friday breakfast had as outside guests, the managing editors of St. Paul newspapers. The Saturday breakfast was attended by council members, committee chairmen, speakers on the general subject of Social Medicine for the College Lecture Course annually sponsored by the Minnesota State Medical Association and the Minnesota Public Health Association. All were enthusiastic.

Carnage is Terrific

Said Doctor Fishbein:

"The record of organized medicine in America for the last decade is inspiring.

"One threat has been dismissed after another. From each we have emerged in better form and in a better strategic position. Looking back at the fate of the tacklers who have successively carried the attack, we can see now that the carnage has been terrific.

New Threat

"The new threat—the so-called 'split' in the American Medical Association occasioned by the petition of the 'Committee of Physicians' and signed by the now famous 430—is more insidious than any of those that preceded it.

"Splitting" Medicine

"Not that the action of 430 men, most of them full-time men in the schools and laboratories, out of a total of 106,000 who are members of the American Medical Association, really represents a split in the 106,000.

"The danger lies in the possibility that other men may thoughtlessly and carelessly do what many of the 430 did—lend their names to movements and petitions that they do not fully understand. Then there will be more talk of splitting organized medicine and the position of medicine before the Congress and the people will be definitely weakened.

"If the Committee on Physicians incident serves to bring this danger to the attention of all our members and warn them against it, it will serve a good purpose.

* * *

"In the past three days, sixty men have written to me that they signed without any clear conception of the use to be made of their names—merely because the signers seemed to be good men, or because someone asked them, or for other trivial and irrelevant reasons.

History and Background

"Here is the history and background of the incident. When the work of American Foundation Studies in Government approached a conclusion, Miss Esther Everett Lape, member in charge, approached officials of the American Medical Association with the information that considerable pressure was being brought to organize a group of physicians who should draw up conclusions and recommendations based upon their studies in medicine. We added some names to a suggested list. Some of the men thus invited refused to be associated with the undertaking. Later, others were invited to lunch with Miss Lape and Mrs. Roosevelt with the understanding that they would present their conclusions to the President.

"The President was reported to have said (Bear in mind, one does not quote the President): What is the

attitude of the American Medical profession? Does the medical profession approve?

"The little group of invitees drew up some principles and proposals that closely paralleled the resolution submitted to the House of Delegates of the American Medical Association.

* * *

"Near the end of the sessions of the New York Medical Society's House of Delegates, the principles and proposals later presented at Atlantic City were passed and Doctor Kopetzky, a delegate, brought the report to Atlantic City.

Possibilities for Harm

"The result of that fight and the definite rejection of the proposal by the House of Delegates is well known. The Principles and Proposals circulated by the Committee of Physicians, now erroneously said to have 'split' the American Medical Association, represent a new effort by the same group to carry out its plan.

"The object is to get as many good names as possible so that Congress and the public will believe in the split. The methods are questionable. The action of the men who thoughtlessly lend their names to the project is worse than questionable. It holds possibilities for serious harm.

* * *

"Incidentally, I never saw a more dismayed countenance than one presented by a Chicago signer confronted by a story run subsequently in the *New York Times*. The headlines read like this: 'PHYSICIANS REVOLT IN FAVOR OF STATE MEDICINE.' Like so many others, this man was one of the inadvertent signers.

Objections

"As to the Principles and Proposals, themselves: I have pointed out in the *JOURNAL* and in a communication to the *New York Times*, the threat to the independence of the medical profession and of the hospitals in the United States that lies in Federal subsidies. Whenever the government supplies funds, the government must also approve plans. Under such circumstances medical standards are bound to deteriorate; progress wanes.

"The proposals provide also for the creation of a new class; the class of 'medical indigent' which may embrace about 90 per cent of the population.

* * *

"These medically indigent have been said to include all of the families in the United States whose income is \$3,000 a year or under. If we should pledge ourselves to provide medical care for the millions of Americans in this class, we should nearly pledge ourselves to the Russian system of State Medicine.

"In that connection, any of you who want to know what the Russian system is like should read the book just published by a correspondent of the United Press who spent six years in Russia, went there avowedly sympathetic to Communism and left at the invitation of the government, stripped of all illusions. This corre-

spondent, whose name is Eugene Lyons, is probably better informed on Red Medicine than the authors of the book called *Red Medicine*, which was written after a whirlwind tour of six weeks by John Kingsbury and Sir Arthur Newsholme. The Lyons book is called 'Assignment in Utopia' and I heartily recommend it to anyone who is interested in Russia.

Just One Week!

"Another book on Russia, 'Soviet Medicine,' by Sigerist of Johns Hopkins, is off the Press this week. The author is typical of the virtuosi who consider that progress is merely change and that a change from the American to the Russian system would necessarily be progressive. The aptest comment on all these hopeful efforts appears in the Lyons work. Anyone who admires Russian medicine should spend just one week in the second best hospital in all Russia, says Mr. Lyons.

* * *

"In Russia, and in the United States, if the 430 signers have their way, all matters relating to the distribution of medical care, are to be in the hands of 'experts.' And the experts in this case are naturally the social workers, the economists, and minor bureaucrats.

"If medicine is put in the control of the 'experts' there is no future in medicine at all.

* * *

"What do the proposals of the Committee on Physicians and all advocates of State Medicine offer the physician?

"They offer the young man in medicine and the less competent practitioner a better income earlier in his career.

What of the Future?

"But beware the Greeks who come bearing gifts! The young men in England enter the panel early because it offers an immediate income when they leave school. They do not accept fellowships, residencies, further opportunities to study so that they may become consultants later on.

"The result is that few specialists are being trained in England to take the place of the older generation that is passing. The young men who went into panel practice stay there, weighed down by too many duties and by inertia, inevitably becoming slipshod and rusty in the practice of their profession.

"Who is to man the voluntary hospitals and where are the consultants of the future in England?

In America, Too

"It was the lower income bracket, amounting to about 25 per cent of the practicing profession, that favored sickness insurance and brought about the system of panel practice in England.

"In America we have the same group to fear. So far as the 430 themselves are concerned, I believe we have no need to worry. Before long they will have realized the error of their ways—or the futility of further effort. But there are always a few—I don't

know how many, of course,—who would sign away the whole profession for an income increase of twenty per cent.

* * *

"Has the American Medical Association a definite policy? Why does not the A.M.A. offer a 'plan' for medical care? Yes, the American Medical Association has a definite policy but it is manifestly impossible to develop any one plan which will properly embody this policy all over the United States. Conditions vary widely from community to community.

"We can and do study experiments of various kinds that are being carried on all over the country. We can evaluate them, suggest improvement and assist, where it seems wise, in extending these plans.

"The policy of the American Medical Association is directed toward one end: protection of the quality of medical care.

Doctors Must Talk

"This is the policy and objective that physicians everywhere must emphasize at every opportunity. The public is interested; open forum meetings, luncheon club programs, are open to speakers on the subject. Mr. William Trufont Foster and Mr. Michael Davis are speaking at these meetings; they are angling for debates on the subject. Physicians must be prepared to discuss it intelligently. They drive home aspects of the problem that are largely overlooked by these enthusiasts for State Medicine.

* * *

"Do not forget that enthusiasts propose to take care of about ninety per cent of the people, by the check-off system. Tell your audiences this: They propose to take care of you with YOUR money, checked off from your wages.

"At what point will this check-off stop? It has begun with Old Age Benefits and Unemployment Insurance in the United States.

"Surely there is a fundamental threat to democracy in a system by which government takes increasing portions of income to do for its workers what the workers could otherwise do for themselves.

* * *

"Abolish Bureaucracy"

"Personally, I believe there will be a turn in America, however. Last summer, Senator J. Hamilton Lewis came to Atlantic City to feel out the American Medical Association on federalization of care of the indigent and low income groups; later he introduced a resolution asking for such a change in the United States Senate. Yesterday a story appeared in the papers quoting the Senator to a very different effect. The Senator has been to Germany; he has seen the check-off system in action. He has seen bureaucracies at work. Now he says for quotation: 'We must abolish bureaucracies.' State Medicine, Insurance Medicine cannot run without bureaus.

Look for the Politician

"Medicine in America is on a higher plane than anywhere else in the world today. When people tell you that one third of our people lack adequate medical care, look behind the figures and see if they are not inspired by some politician who wants a change and a new job.

"Of course, there are the indigent. They must be cared for, as always. And we doctors who wish to preserve the best in American medicine must see to it, especially, that they are cared for. That has always been our responsibility. We do not shirk our share in it now.

* * *

Welcome Aid

"There is a method by which government funds can be safely and effectively used to assist in the care of those who cannot pay the whole bill for expensive treatment themselves. The government can assist in providing the costly materials, the serums, laboratory procedures and x-rays that the physician needs for modern diagnosis and treatment of his patients.

"So long as government funds are used for materials and not for service, standards of care should not be endangered. This type of assistance is already available to a considerable extent and the indications are that it will be extended.

New Legislation

"The tragic deaths from elixir of sulfanilamide will probably serve to bring about passage, at least, of new food and drugs legislation at the special session of Congress. I look for no other major legislation at this session that will materially affect the practice of medicine.

* * *

"The plan for reorganization of government offices that is most favored, apparently, by the administration calls for a Department of Public Welfare. This department is to include within its jurisdiction education, charity, WPA, the Youth Administration, Public Health and Medicine, with the exception of the medical departments of the Army and Navy.

"Under such an arrangement, health and medicine would undoubtedly be the business of a third assistant secretary, possibly under Harry Hopkins (generally accepted as the probable head of such a department).

"It is most unlikely that Surgeon General Thomas Parran would relish the opportunity to become a third assistant secretary in any cabinet department.

"Naturally, the American Medical Association is opposed to such a reorganization. Health should be the business of an independent department, headed by a qualified physician. It is said to be unlikely that the Congress will enact any such legislation at the special session."

Opportunity

(Monthly Editorial Prepared by the Medical Advisory Committee)

Since history began we find that two things have been uppermost in the minds of man: the sustaining of life, and the propagation of the race—purely animal instincts. To refine and control these came the professions of teaching, law, ministry, and medicine.

The first teacher was the "old man" of the family gradually evolving into the elaborate school systems of today, wherein we are taught the tenets of self control.

The law began with admonitions as laid down for the protection of family life, the "Do unto others as you would have others do unto you." Now we find the temples of justice for the interpreting of the law builded on every hand, teaching us the rights of others as well as ourselves.

The ministry began with the mystery of life, the whys and wherefores of the terrestrial bodies, the seasons, the worry about the hereafter. Today we find millions who worship according to their own dictates in huge religious edifices, spreading the gospel of tolerance.

Medicine had its beginning in superstition, the thought that all disease was a retaliation from the gods. Gradually we have erected, not only a place for ourselves as members of one of the oldest and noblest professions on earth in government, but, more to be desired, a place in the hearts of man which nothing can supplant. Intimate contact gives us a chance to observe the frailty of human nature.

The homes of the nation are the places of our greatest opportunities to promote the tenets of good living and good government. Have we taken advantage of this opportunity to mold public opinion?

Your Medical Advisory Committee believes that as business is being transacted more and more on the basis of friendship and cordiality, so the medical profession should promote good fellowship and mutual understanding among its members. Let us give a thanksgiving for the opportunities that have been ours in the past. Let us have a hope that the new year will bring renewed opportunities for service to mankind without the fettering strings of outside supervision.

Insurance in San Francisco

Sickness insurance for government workers holds grave possibilities for the future; should be watched.

A plan for complete hospitalization and medical attention for San Francisco's 13,000 municipal employees got underway with a charter amendment passed by the voters last March. Contracts are being approved. Two or three other cities are doing the same thing.

The insurance plan for Washington employees of the Federal Home Loan Board is still going quietly forward though the machine is not actually set up and the charter is said to have been kept out of the hands, even, of curious members of the House of Representatives and the Senate who have asked for copies.

The step is not far from voluntary sickness insurance for large groups of government employees to the same service for other large groups of employees. The step from many unsatisfactory voluntary systems of sickness insurance to compulsory insurance for all is almost inevitable, as European experience shows.

Difficulties

Sickness insurance went onto the statute books of British Columbia some years ago but two or three years are still likely to elapse before it goes into effect, according to Premier Patullo in a recent interview. It waits now upon the report of a commission which cannot report, at best, until 1939. In the meantime, the commission is ironing out difficulties with the medical profession among them the income limit for insurees, which has already been lowered from \$1,800 to \$1,500 a year.

Minnesota State Board of Medical Examiners

A Warning from the Minnesota State Board of Medical Examiners Concerning the Handling of Narcotics

To the Members of the Medical Profession of Minnesota:

During the year 1937 the Minnesota State Board of Medical Examiners found it necessary to summon twenty-one Minnesota physicians before the Board for violations of the Harrison Narcotic Law and for drug addiction. Fourteen physicians were in trouble because

of infractions of the law relating to the prescribing and dispensing of narcotics to addicts, while seven of the physicians were before the Board because of habitual indulgence in their own use of morphine. The seven cases involving addiction were referred by the Narcotic Bureau to the Medical Board for disposition. In the other group, four out of the fourteen physicians were indicted by the Federal Grand Jury and all pleaded guilty. Fines totaling \$1,300 were paid by two physicians; two physicians were placed on probation. The remaining ten physicians were permitted to submit offers in compromise totaling \$1,275 and in addition their cases were referred to the Medical Board.

The Medical Board conducted hearings at each Board meeting during the year on these cases. Each case was investigated by Mr. Brist, attorney for the Board, prior to the hearing. In every case involving addiction of the physician, the Board orders the surrender of the stamp tax and right to dispense or prescribe narcotics. In three of the cases involving addiction the physicians are not practicing. In one case the physician was ordered not to practice pending treatment; in another case the suggestion was made that the physician retire from the practice of medicine. In the other group ten out of the fourteen physicians were voted a reprimand; the license to practice medicine of another was revoked, while the other three lost their privilege of dispensing and prescribing narcotics.

The youngest physician before the Board was twenty-six years of age, while the oldest was eighty. Four physicians in the first group involving addiction were members of the Minnesota State Medical Association. In the other group five out of the fourteen physicians were members of the Minnesota State Medical Association. The Board was quite surprised to hear several of the younger physicians who are recent graduates of the University of Minnesota state that they had no knowledge of the provisions of the Harrison Law and that they were quite certain they had not heard about it in the Medical School. The Medical Board believes that it would be very advantageous to the medical profession if more emphasis were placed on this subject in the medical curriculum. A suggestion might be to invite a well-versed member of the Narcotic Bureau or United States Attorney's office to give a lecture each year to the medical students and in addition the Medical Board would be very glad to cooperate by furnishing a member of the Board to give a friendly lecture on the problem as the Board views it from their experience.

In conclusion, the Medical Board wishes to state that they do not intend to be as lenient in the future in these cases. The stock excuse of most physicians is that they were "framed." Is it not quite a task to frame a physician who practices medicine in good faith, particularly one who insists on examination and diagnosis? Can good faith even enter the picture when the fundamentals of medical practice are absent and prescriptions are sold at \$5.00 each? The Medical Board does not approve of some of the tactics used in the past in obtaining evidence to enforce the narcotic laws, but if every physician will remember what a Federal judge said in sentencing a Minnesota physician for a violation of the Harrison Law, he will have no occasion to appear either before the Narcotic Bureau, in Federal Court or before this Board. The statement was: "The mere fact that you are educated as a physician presupposes intelligence." The Board has made an honest effort to cooperate with the Narcotic Bureau, the United States Attorney's office and the Federal Court. After reviewing these cases the Board believes that considerable leniency has been shown the physicians involved, by various governmental agencies, and in so far as the Medical Board is concerned, unless that leniency is rewarded with a reduction in these cases to a very minimum, there will be more licenses to practice medicine revoked. The Board desires to be friendly

and fair, but it has a duty to perform, and unless it does perform it, some other agency will probably be asked to do it. The Medical Board invites the sincere cooperation of every person practicing medicine in this state and respectfully asks that this matter be given the attention that its seriousness warrants at medical meetings throughout the state. The Board is fully aware of the fact that these twenty-one cases do not represent the total number of physicians in Minnesota who violate the Harrison Narcotic Law and a decided improvement is assuredly in order.

Remember, when a person comes into your office asking for narcotics, the answer is "No!"

This statement issued by order of the Minnesota State Board of Medical Examiners this 12th day of November, 1937.

(Seal) (Signed) JULIAN F. DuBois, M.D.,
Secretary.

Minneapolis Woman Pleads Guilty to Sale of Contraceptives

Re: State of Minnesota vs. Cecelia Scott

On November 22, 1937, Mrs. Cecelia Scott, thirty years of age, entered a plea of guilty in the District Court of Hennepin County at Minneapolis, to an information charging her with the unlawful sale of contraceptives. Mrs. Scott is not licensed to practice any form of healing in the State of Minnesota and resided at 118 West 39th Street, Minneapolis. After a statement of the facts to the Court the defendant was sentenced by the Honorable Arthur W. Selover, Judge of the District Court, to pay a fine of \$75.00 or serve sixty days in the Minneapolis Work House. Mrs. Scott paid the fine, and stated to the Court that she would obey the law in the future.

Mrs. Scott stated that she came to Minneapolis in the spring of 1937, from Kansas City, Missouri; that she represented The Smith Laboratories Corp., and that they had an office at 408 Wesley Temple Building. According to the literature distributed by Mrs. Scott, The Smith Laboratories are the sole manufacturers of Colagyn and Phyllassogyn. Mrs. Scott did not confine her contacts to the medical profession but went to private homes because of information that she obtained through the daily birth notices in the Minneapolis newspapers. She charged \$6.00 for her so-called "set" and refills were sold at the rate of \$2.00 each. When policemen called upon Mrs. Scott they were told, among other things, that a physical examination could be arranged for them at the office of Arthur Kolling, a chiropractor in Minneapolis. Kolling has no license to practice medicine in the State of Minnesota, and already has a previous conviction for practicing medicine without a license. Mrs. Scott stated that she had no business connection of any kind with Kolling but had learned of him through a customer. She stated that she had no knowledge that he was a chiropractor.

For the convenience of the medical profession, the laws of the State of Minnesota on this subject are as follows:

"Every person who shall sell, lend, or give away, or in any manner exhibit, or offer to sell, lend, or give away, or have in his possession with intent to sell, lend, give away, or advertise or offer for sale, loan or distribution, any instrument or article, or any drug or medicine, for the prevention of conception or for causing unlawful abortion; or shall write or print, or cause to be written or printed a card, circular, pamphlet, advertisement, or notice of any kind, or shall give oral information, stating when, where, how, of whom or by what means such article of medicine can be obtained or who manufactures it—shall be guilty of a gross misdemeanor, and punished by imprisonment in the county jail for not more than one year, or by a fine of not more than five hundred dollars, or by both."

—Section 10188, Mason's Minnesota Statutes for 1927.

"Every person who shall deposit or cause to be deposited in any postoffice in the state, or place in charge of any express company or other common carrier or person for transportation any of the articles or things specified in Sections 10187, 10188, or any circular, book, pamphlet, advertisement, or notice relating thereto, with the intent of having the same conveyed by mail, express, or in any other manner; or who shall knowingly or wilfully receive the same with intent to carry or convey it, so shall knowingly carry or convey the same by express, or in any other manner except by United States mail—shall be guilty of a misdemeanor. But the provisions of this section and Section 10188 shall not be construed to apply to an article or instrument used by physicians lawfully practicing, or by their direction or prescription, for the cure or prevention of disease."

—Section 10189, Mason's Minnesota Statutes for 1927.

Canby Physician's License Suspended for Two Years

In the Matter of the Revocation of the License of
John Lynn Erickson, M.D.

Following a hearing held by the Minnesota State Board of Medical Examiners on November 12, 1937, the license to practice medicine held by John Lynn Erickson, M.D., of Canby, Minnesota, was suspended for a period of two years. Dr. Erickson was cited to appear before the Board because of conduct unbecoming a person licensed to practice medicine and detrimental to the best interests of the public. The citation was issued following an investigation made by the Board into the circumstances surrounding the death of a patient of Dr. Erickson, and the use of alcoholic beverages by Dr. Erickson. It was also brought out at the hearing that Dr. Erickson had been convicted on October 31, 1937, in Lincoln County, of driving a motor vehicle while under the influence of intoxicating liquor.

Dr. Erickson was born at Canby, Minnesota, February 10, 1888. He is a graduate in medicine in the University of Minnesota, 1923, and was licensed by the Minnesota Board the same year. Dr. Erickson has practiced at Twin Valley, Hendricks and Canby, Minnesota.

Treatment of Undescended Testicle

Dr. R. E. Smith, medical officer of Rugby School, said that he had under observation 600 boys between the ages of 13 and 18 in one school and some 400 between the ages of 9 and 18 in another. In six years he had collected data on twenty-three cases of undescended testicle and found that the testicles usually descended into the scrotum at puberty in the majority of those who reached it. The age of descent varied from 12¾ to 14¼ years in seven cases. In an eighth it was 16½ years, but this boy had general endocrine deficiency. Of three failures one had an ectopic testis and one had had an unsuccessful operation at the age of 8 years. The remainder of the boys being observed have not reached puberty, their ages being from 9 to 14 years. Dr. Smith therefore concluded that the undescended testes should be left to nature until puberty, provided ectopic testes can be excluded. If no change then occurs, gonadotropic extract should be given in full doses. If this fails, the aid of the surgeon should be sought to ascertain whether some abnormality is preventing descent.—Foreign Letters—London, Jour. Am. Med. Assn., 109:1734, (Nov. 20) 1937.

COLLECTION METHODS

One of our readers after reading an article entitled "The Collection Agency Racket" by Stanley B. Houck, which appeared in the September number of MINNESOTA MEDICINE, submitted the following form which he has used with satisfaction. As he states, the representative of the collection agency signs the form, which is made out in duplicate.

IT IS HEREBY AGREED, In the acceptance of the following named account for collection the following named conditions are accepted and will be observed: 1. The ownership of the account at all times rests in the name of John Doe. 2. At any time the owner of the account may withdraw the account from collection, subject only to payment for collections made. There shall be no additional charges made against the withdrawn account for attorney's fees, court costs, postal charges, or services rendered by the collection agency. If the withdrawn account be paid within sixty days after withdrawal, it is to be considered paid through the collection agency and subject to the agreed charges for collection. 3. There shall be at all times an effort made to retain for John Doe, the respect, confidence, and goodwill of the debtor. 4. There shall be no legal proceedings undertaken without the owners written consent. 5. The rate for collection is not to exceed 50% in total charges. 6. A written report of progress, or action taken toward collection of this account shall be rendered quarterly. If, after one year, no progress has been made, the account shall be returned to John Doe, without charge for services, and the account considered dropped.

Name of debtor.....
Address
Amount due.....
Date first services rendered.....
Date last services rendered.....
Total amount paid on account.....

Date of last payment.....
RECEIVED of John Doe the above named account subject to the conditions of the agreement.

Minneapolis, Minn.
Date.....
SUBSEQUENT DATA.

A second form is a contract for payment which will become a note if payments are not kept up. The attractive feature to the patient is that no interest is paid if he makes his payments. For the doctor it is an acknowledgment of the account. If the patient is honest and intends to pay, there is little trouble securing his signature to pay a certain amount periodically. The second form is as follows:

\$..... Minneapolis, Minn.....19....

M.....
To John Doe, Dr.

To Professional Services Rendered.....
the sum of.....DOLLARS

I acknowledge the correctness of the above account and agree to pay the same.....
....., with interest at six per cent upon any unpaid balance after.....

It is also agreed; failure to make payment upon any payment date renders the entire balance due, as of that date, and interest to be reckoned, as from that date.

Patients so often forget they have an obligation when they only verbally promise to settle an account by paying a little each month, that the above method seems quite worth while.

In Memoriam

William C. Portmann 1858-1937

Dr. W. C. Portmann was born at Herpertsweyle, Switzerland, on June 7, 1858. He was the seventh of ten children. His father, Ursus Victor Portmann, was a well known civil engineer, builder and architect. His mother was Anna Maria Hug Portmann.



Influenced by his impressions on a previous visit, the doctor's father moved the family to the United States, arriving at Navaare, Stark County, Ohio, in 1869. There he quickly found employment as a builder, and an older brother of Dr. Portmann was educated in medicine and later became the physician to

President McKinley and his family.

The family moved to Canton, Ohio, in 1871, and there Dr. Portmann received his elementary education. His father having died in 1873, the family was in very difficult situation financially. Dr. Portmann was employed by The Diebolt Safe & Lock Works at Canton, and by his energy and ingenuity in improving methods, and by extra hours as a plumber, he saved enough money for his medical education.

The doctor attended school at the Western Reserve Medical College in Cleveland and was graduated from that college in 1881. He then practiced for about two years at Canton, Ohio, with his older brother, Dr. E. O. Portmann, and there met, and on September 13, 1883, married Emma Elizabeth Ball, the daughter of Ephriam Ball, a manufacturer and the inventor of many improvements on harvesting machinery.

Doctor Portmann and his bride started the morning of their wedding day to Mandan, South Dakota. There the young doctor found that the expiring land boom made earning a living a difficult matter, and after three years of struggle, he moved to Jackson, Minnesota. At Jackson, the doctor practiced for more than forty years. He returned to Canton, Ohio, upon one occasion for less than a year, but moved back to Jackson.

In the early days, his teams and "buggy" were a familiar sight in every corner of Jackson County. Blizzards or roads, hup-deep with mud, were never considered reasons for failure to attend his patients. Many times he did not see his children for days on end, leaving before they were up in the morning and returning after they were in bed at night. Only a superb physical equipment made it possible for him to do the prodigious amount of work he accomplished. Nevertheless, Dr. Portmann found time to serve as a member of the council of the Village of Jackson, as Mayor, County Coroner, and President of the School Board.

Three sons, Ursus V. Portmann, now a doctor in Cleveland, Ohio, Milton C. Portmann, now an attorney

in Cleveland, and Arthur B. Portmann, a sales manager in Cincinnati, Ohio, were graduated from Jackson High School and from Western Reserve University.

Dr. Portmann retired from active practice in 1927. The death of his wife in 1927 was a blow from which he never fully recovered. After his retirement, he visited the families of his sons twice a year and spent his winters at Miami, Florida. He returned to Jackson in the Spring of each year.

Dr. Portmann, who through all of his life had been passionately fond of hunting and fishing, died at the age of seventy-nine on the morning of November 3, 1937, while sitting quietly in his duck blind on Rush Lake, Minnesota. He was buried beside his beloved wife, and among many of those who with him had pioneered the development of Jackson County, in the Riverside Cemetery at Jackson.

Martin L. Mayland 1868-1937

Dr. M. L. Mayland, a physician for the past forty-four years in Faribault, died November 16, 1937, at Rochester, following a five years' illness.

Dr. Mayland was born in Goodhue County, September 23, 1868. He attended the county public schools and Carleton College and obtained his medical degree from the University of Minnesota in 1892. The following year he took a postgraduate surgical course at the New York Postgraduate School of Medicine and a short course in surgery at McGill University.

After practicing a year at Mankato, Dr. Mayland moved to Faribault, where he played a prominent rôle in the city's civic, political, fraternal and professional life. He had been coroner of Rice County for the past six years. He was instrumental in founding Faribault's first hospital, the city hospital in 1895. He also took an active part in the establishment of St. Lucas Hospital and performed the first operation in both hospitals.

During the World War Dr. Mayland was a member of the Medical Volunteer Service corps and was drafted. He was making preparations to enter active service when the armistice was signed.

Dr. Mayland was a member of the Rice County Medical Society, the Southern Minnesota Medical Association, the Minnesota Medical Association, and the American Medical Association.

During the past twenty-five years, Dr. Mayland had served three terms as county coroner, a position which he held at the time of his death. For several years he was city health officer. He was exalted ruler of Faribault Lodge B.P.O.E. when the present lodge building was erected. He was an active member of the Congregational Church.

On November 30, 1901, Dr. Mayland married Josephine Sullivan, who was at the time superintendent of the city hospital.

Surviving Dr. Mayland in addition to his widow are one son, Martin L. Mayland of Louisville, Kentucky; a brother, Dr. L. L. Mayland of Great Falls, Montana; and two sisters, Anne Mayland of Minneapolis and Mrs. John Dahl of Spokane, Washington.

OF GENERAL INTEREST

Dr. M. Weisberg has recently opened offices in New Brighton for the practice of medicine.

* * *

Dr. A. M. Boe has located at Deer River where he will resume the practice of medicine.

* * *

Dr. S. A. Slater, of Worthington, conducted a free chest clinic there on November 10.

* * *

Dr. John Eiler, formerly of St. Bonifacius, has located in Park Rapids for the practice of medicine.

* * *

Dr. A. J. Emond has recently joined his brother Dr. J. S. Emond of Farmington, in the practice of medicine.

* * *

Dr. Paul G. Schmidt, formerly of Cottonwood, has become associated with Dr. M. S. Nelson of Granite Falls.

* * *

Dr. S. B. Haessly, of Faribault, was named a member of the Mineral Springs Sanitarium board at the regular meeting held on November 10.

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Dr. and Mrs. P. F. Holm of Wells, will spend the winter in Florida in their trailer, being located in or near Miami.

* * *

Dr. M. C. Piper was elected president of the Olmsted-Houston-Fillmore-Dodge County Medical Society at a meeting held November 3.

* * *

Dr. W. T. Pearson, formerly of Finlayson, has located in Duluth where he is the examining doctor at the National Optical Company.

* * *

Dr. Archie Arkin, of Winnipeg, has located in Lindstrom, where he is associated with Dr. C. P. Truog in the practice of medicine.

* * *

Dr. M. Brownstone, of Sandstone, and Miss Dorothy Jane Margulies, of Minneapolis, were married in the East Room of the Curtis Hotel in Minneapolis on November 2.

* * *

Dr. F. H. Rollins, of St. Charles, is one of eight Minnesota men given the rank of knight commander of the Court of Honor by the Supreme Council of the 33rd Degree, Ancient and Accepted Scottish Rite of Free Masonry of the southern jurisdiction of the United States at the biennial session at Washington, D. C., in October.

* * *

Dr. S. A. Slater, of Worthington, has been elected president of the Minnesota Public Health Association. Other officers elected were Dr. Russell H. Frost, Wa-

basha, first vice president; Mrs. Eunice L. Rice, Austin, second vice president; N. Vere Sanders, Albert Lea, secretary, and Arthur M. Calvin, Minneapolis, treasurer.

* * *

The Board of Regents of the University of Minnesota established in the past summer in the Department of Surgery a teaching and hospital division of Neurosurgery. Dr. William T. Peyton, Associate Professor of Surgery, has been made Director of the new Division of Surgery. Other members of the staff are: Dr. Arthur A. Zierold, Professor; Dr. J. Frank Corbett, Clinical Professor; Dr. W. P. Ritchie, Clinical Assistant; and Dr. George E. Dunn, Clinical Assistant Professor.

* * *

A number of Minnesota physicians and their wives expect to participate in the seventh inter-American Cruise Congress of the Pan American Medical Association in Havana and the West Indies this winter. The group from Rochester includes Dr. and Mrs. V. S. Counsellor, Dr. and Mrs. W. McK. Craig, Dr. and Mrs. H. Z. Giffin, Dr. and Mrs. F. A. Willius and Dr. and Mrs. H. R. Hartman.

In addition to Havana, stops will be made at Port au Prince, Haiti; Trujillo City, San Domingo, and San Juan, Puerto Rico. Medical sessions will be held at all the ports of call.

* * *

Navy Medical Corps Examination

An examination of candidates for appointment as Lieutenant (junior grade), in the Medical Corps of the Navy, will be held at all Naval Hospitals in the United States and at the Naval Medical School, Washington, D. C., beginning May 16, 1938.

Candidates for admission must be between the ages of twenty-one and thirty-two years at time of appointment, graduates of Class "A" medical schools, and have completed an internship of one year in a hospital accredited for interns by the American Medical Association and the American College of Surgeons.

Those who are interested should write the Surgeon General, U. S. Navy, Bureau of Medicine and Surgery, Navy Department, Washington, D. C., for further information in regard to the examination and the procedure to follow for them to appear before one of the Examining Boards.

* * *

Correction.—Last month we published a news item to the effect that Dr. A. A. Giroux of Duluth had opened offices for practice in Red Lake Falls. Dr. Giroux informs us that the information submitted to MINNESOTA MEDICINE is erroneous and we take this opportunity to correct the error. Dr. Giroux is still located in Duluth at 518 Medical Arts Building.

Dr. E. A. Meyerding Banqueted

Medical, public health and educational leaders from all sections of the state of Minnesota gathered at the Lowry Hotel, Saint Paul, Thursday, November 11, at a surprise testimonial dinner in honor of Dr. E. A. Meyerding, Saint Paul, executive secretary of the Minnesota Public Health Association and secretary of the Minnesota State Medical Association. Dr. Meyerding has devoted more than thirty years to the promotion of public health in Minnesota.

Tribute to the energy, efficiency and ability shown by Dr. Meyerding in his work was paid by a distinguished group of his associates including Dr. J. A. Myers, Minneapolis, president of the National Tuberculosis Association; Dr. A. W. Adson, Rochester, president of the Minnesota State Medical Association; Dr. O. J. Hagen, Moorhead, president of the Minnesota Public Health Association; Dr. C. B. Wright, Minneapolis, trustee of the American Medical Association; Dr. J. M. Hayes, Minneapolis, president-elect of the Minnesota State Medical Association; Dr. E. K. Geer, Saint Paul; Dr. A. T. Laird, Duluth; Mrs. A. L. Sperry, Owatonna, who represented the volunteer Christmas Seal workers of the state. Dr. S. A. Slater, superintendent of Southwestern Minnesota Sanatorium, Worthington, a director of the National Tuberculosis Association, served as toastmaster.

Dr. Meyerding has served as executive secretary of the state Christmas Seal organization for fourteen years, and prior to that time was Director of the Division of Hygiene and Special Classes of the Saint Paul Public Schools for fifteen years. He spent two years in the United States Army Medical Corps in which he is now a Colonel. He has been secretary of the Minnesota State Medical Association since 1925.

* * *

Christmas Seal Sale

Leaders in the medical profession and in public health work in the nation lend their endorsement to the annual sale of Christmas Seals and the widespread program for better health and against tuberculosis promoted by the funds thus raised.

Christmas Seals!



Buy and Use Them

The 1937 Christmas Seal sale will open Thanksgiving Day throughout the state and nation. In Minnesota the campaign and the anti-tuberculosis program is carried on by the Minnesota Public Health Association under the leadership of Dr. E. A. Meyerding, executive secretary, and the affiliated county associations.

Dr. Thomas Parran, Surgeon General, United States Public Health Service, has this to say of the Christmas Seal campaign:

"In launching a more intense and specific battle against tuberculosis money as well as strenuous effort will be required. Funds will become available to a considerable extent through the sale of Christmas Seals, now in the 31st year of their usefulness. These Seals, so pleasantly reminiscent of the Christmas season and the winning fight against a ruthless enemy, will, if sold in sufficient quantities, aid measurably in the intelligent direction and actual field activities of of skilled fighters against tuberculosis. Despite the

temporary check to our repressive measures I reiterate, 'Tuberculosis can be wiped out in our nation.'"

Dr. J. H. J. Upham, president of the American Medical Association, adds his endorsement of the Christmas Seal. He says:

"Tuberculosis for many years was considered purely a medical question.

"Following the discovery of the tubercle bacillus and the rapidly following information as to its entering places, manner of entrance, the role of reduced resistance by malnutrition, insanitary housing and bad working conditions, its prevention, control and treatment became too great a matter for the medical profession alone.

"The activity of the National Tuberculosis Association in public education leading to prevention, its emphasizing the need of early recognition and treatment, aiding in securing of laws correcting industrial hazards and insanitary living conditions, and especially in fostering the providing of state and community sanatoria, entitles this organization to national recognition and support.

"The Christmas Seal sale is not only a substantial financial aid in this work, but in addition has a wide educational value in keeping the public conscious of the still deadly power of tuberculosis.

"This annual campaign therefore should have the endorsement and support of every good citizen."

In the increased death rate from tuberculosis shown in Minnesota for 1936 is reflected the accumulated results of the years of economic depression, according to Dr. Kendall Emerson, managing director of the National Tuberculosis Association, who reports that twenty-four states in the nation showed an increased rate in 1936.

"By a concentration of effort we hope to start the annual mortality from the disease once more on its downward trend," Dr. Emerson said. "Though the rise in tuberculosis mortality is slight at the moment, it should be taken as a call to arms. The people of the country should give every aid to push back this ruthless enemy before it has regained an appreciable amount of the ground from which it has been forced to retreat."

ORAL VACCINE IN THE "COLD" SEASON

During the winter of 1936-1937 Eli Lilly & Co. strenuously advocated the treatment of colds with an oral vaccine, Entoral. Since colds are generally self limiting, scientific evidence on the value of any preparation is hard to obtain. The Council on Pharmacy and Chemistry considered Entoral and declared it unacceptable for inclusion in New and Non-official Remedies because the hypothesis on which the product is based is inadequately supported by experimental evidence and the reports of its use contained in the literature are insufficiently documented. Now the William S. Merrell Company has been circularizing the profession with claims broader and more bombastic than those made for Entoral. Its product is Catarrhal Oravax-Merrell, described as catarrhal vaccine in enteric coated tablet form. The firm claims that "by the use of Catarrhal Oravax it is now possible to immunize large industrial groups against common cold at extremely low cost." Has any competent industrial surgeon actually established the usefulness of this preparation? Recent advertising mentions only experiments on Merrell's own employees! (J. A. M. A., Oct. 2, 1937, p. 1130.)

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR DECEMBER

The Minnesota State Medical Association Morning Health Service.

The Minnesota State Medical Association broadcasts weekly at 9:45 o'clock ever Saturday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month will be as follows:

December 4—Nasal Obstruction.

December 11—Typhoid Fever.

December 18—Tuberculosis.

SCIENTIFIC EXHIBIT—A.M.A.

Application blanks are now available for space in the Scientific Exhibit at the San Francisco Session of the American Medical Association, June 13-17, 1938. The Committee on Scientific Exhibit requires that all applicants fill out the regular forms.

Application blanks may be obtained from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

AMERICAN PUBLIC HEALTH ASSOCIATION

The sixty-sixth annual meeting of the Association, held in New York City, October 5-8, 1937, proved to be the largest meeting in the Association's history. The registration was 3,549.

Dr. Arthur T. McCormack was inducted into the office of president and Dr. Abel Wolman of Baltimore was named president-elect.

The 1938 meeting will be held in Kansas City.

AMERICAN MEDICAL GOLFERS

A "Golfers Special" to the San Francisco meeting of the A.M.A. is being organized by the American Medical Golfing Association. Physicians who like golf mixed with their travel will find five games arranged on the trip out to the coast for the A.M.A. meeting of June 13, 14, 15, 16 and 17, 1938, and three games on the return trip through the Northwest. The first game will be played in New Orleans, reached by the Steamship S.S. Dixie, from New York (or via a rail itinerary) on Tuesday, June 7, 1938. Other stops include Houston, Galveston and San Antonio, Texas; Los Angeles and Del Monte, California; and finally San Francisco where the big A.M.G.A. tourney will be held on Monday, June 13, 1938.

The return trip includes Portland, Oregon; Seattle, Washington; Vancouver, B. C.; Lake Louise and Banff, and finally St. Paul and Chicago.

Non-golfers as well as golfers, and their ladies, are

WELCOME and will find the A.M.G.A. Special a glorious experience.

For full particulars write Dr. Walt P. Conaway, 1723 Pacific Avenue, Atlantic City, N. J., the President of the A.M.G.A.; or Bill Burns, Executive Secretary, 2020 Olds Tower, Lansing, Michigan.

MISSISSIPPI VALLEY MEDICAL SOCIETY AWARD

The Mississippi Valley Medical Society offers a cash prize of \$100.00, a gold medal and a certificate of award for the best unpublished essay on a subject of interest and practical value to the general practitioner of medicine. Entrants must be ethical licensed physicians, residents of the United States and graduates of approved medical schools. The winner will be invited to present his contribution before the next annual meeting of the Mississippi Valley Medical Society (September 28, 29, 30, 1938), the Society reserving the exclusive right to first publish the essay in its official publication—the *Radiologic Review and Mississippi Valley Medical Journal*. All contributions shall not exceed 5,000 words, be typewritten in English in manuscript form, submitted in five copies, and must be received not later than May 15, 1938. Further details may be secured from Harold Swanberg, M.D., Secretary Mississippi Valley Medical Society, 209-224 W.C.U. Building, Quincy, Ill.

STATE MEETING

A program prepared with a special emphasis on practical therapeutics is now taking final shape, according to the Committee on Scientific Assembly for the 85th annual meeting to be held in Duluth, June 29, 30 and July 1, 1938.

Only a few details remain to be decided upon for the meeting sections and already three of the distinguished out-of-state guest speakers have definitely accepted invitations to speak.

Most of one morning's sessions will be devoted to clinics in the Duluth hospitals. All other sessions will be held in the ballroom of the hotel with scientific exhibits and demonstrations and technical exhibits surrounding them on the meeting floor and the mezzanine below.

Scientific exhibits and demonstrations will continue to be an especial feature of the meeting as they have in the past and every effort is being exerted to make them practical, stimulating and representative of medical research in Minnesota.

Within a few days after sale of technical exhibit space was opened, all technical exhibit space on the meeting floor had been reserved, and reservations are already coming in tentatively for additional space which

WOMAN'S AUXILIARY

Mrs. J. F. NORMAN, Crookston, *President*
Mrs. A. A. PASSER, Olivia, *Editor*

Ramsey County

At the first general fall meeting held in the Ramsey County Medical rooms of the Lowry Medical Arts building a talk was given by John Nyloff of Holm and Olson on the "Care and Arrangement of Flowers."

An outline for the year's activities was prepared at the morning board meeting at the Woman's City club. Mrs. E. H. Bohland, president, presided.

A series of six reviews of current Broadway plays will be presented under the auspices of the Ramsey County Medical Auxiliary at 10:30 A.M., Tuesdays, in the library of the Medical Society in the Lowry building. Mrs. Arthur A. Stewart will give the reviews.

Members of the Ramsey County Auxiliary meet twice a month in the children's hospital, 311 Pleasant Avenue, to sew for the hospital. The group works under the direction of Mrs. H. T. Nippert, chairman of the philanthropic committee.

Park Region

The regular October meeting of the Auxiliary was held at the home of the president, Mrs. W. L. Burnap, Fergus Falls.

The Auxiliary voted to place *Hygeia* in all senior high schools in this district, which includes four counties, Otter Tail, Wilkin, Douglas and Grant. It will again sponsor the annual Christmas seal high school radio contest. Besides other awards winners will be given a trip to Minneapolis to broadcast their essays. Mrs. Martin Nordland, Minneapolis, past state president, was a guest at this meeting.

Kandiyohi-Swift-Meeker Counties

The November meeting of the Auxiliary was held at the home of the president, Mrs. H. Hutchinson of Willmar. Miss Ward, public health nurse of Kandiyohi county, was the speaker.

Renville County

Regular meetings of the Renville County auxiliary are held the first Tuesday evening of each month at the high school. The December meeting was a Christmas party. It was voted to sponsor again the annual Christmas seal high school radio contest. Mrs. Ralph Adams of Bird Island is president of this group.

St. Louis County

Mrs. Malcolm G. Gillespie, Duluth, president of the St. Louis County Auxiliary, was in charge of arrangements for a rummage sale held by that group in November. Mrs. P. S. Rudie was hostess to the members at their annual Thanksgiving luncheon. Regular meetings of the Auxiliary are held the second Tuesday of each month at 1:00 P.M.

will be opened to take care of the overflow on the mezzanine floor. Mezzanine space will also be used for registration and for scientific exhibits and demonstrations and members are especially urged to call this new opportunity to the attention of representatives of desirable firms who call upon them.

Following is the list of exhibitors who were so prompt in seizing the opportunity to take advantage of the Duluth meeting:

Abbott Laboratories, North Chicago, Illinois
A. S. Aloe Company, St. Louis, Missouri
C. F. Anderson Co., Inc., Minneapolis, Minnesota
Ayerst McKenna and Harrison, Montreal, Quebec, Canada
Brown and Day, Inc., St. Paul, Minnesota
The DeVilbiss Company, Toledo, Ohio
General Electric X-Ray Corporation, Minneapolis, Minnesota
Horlick's Malted Milk Corporation, Racine, Wisconsin
Kellogg Company, Battle Creek, Michigan
Mead Johnson and Company, Evansville, Indiana
The William S. Merrell Company, Reading, Ohio
C. V. Mosby Company, St. Louis, Missouri
Pengelly X-Ray Company, Minneapolis, Minnesota
Petrolager Laboratories, Chicago, Illinois
Philip Morris and Company, Ltd., Inc., New York, New York
Physicians and Hospitals Supply Co., Minneapolis, Minnesota
W. B. Saunders Company, Philadelphia, Pennsylvania
Schering Corporation, Bloomfield, New Jersey
E. R. Squibb and Sons, New York, New York
U. S. Hospital Supply Company, Minneapolis, Minnesota
John Wyeth & Bros., Inc., Philadelphia, Pennsylvania

MINNESOTA SOCIETY OF INTERNAL MEDICINE

The semi-annual meeting of the Minnesota Society of Internal Medicine was held in Saint Paul November 8, 1937, with the president, Dr. George B. Eusterman, presiding. Dr. Charles N. Hensel was elected president for the ensuing year and Dr. Moses Barron, vice president. Dr. Max Hoffman was re-elected secretary and treasurer. Following dinner at the Town and Country Club, the members heard an interesting address by Mr. Arthur Koehler of the University of Wisconsin on "Wood in Crime Detection, with Particular Reference to the Lindbergh Case."

INJECTION TREATMENT OF HERNIA

The injection method, according to its modern advocates, is applicable only to hernias that can be completely reduced and kept reduced by means of a truss. Its use is contraindicated in irreducible hernias, in sliding hernias and in the presence of an undescended testis. Injections are further contraindicated in the presence of superficial skin infections or erosions caused by the truss, in syphilis, diabetes, senility or marked emaciation. Hernias with a wide ring are not likely to give a good result. The case best suited for the treatment is the small reducible, indirect inguinal hernia in a young person. The complicated hernias and the large hernias of the middle aged and the elderly are the least suited for the injection treatment. Anatomic conditions in a direct hernia, in the umbilical and the femoral hernia, make the injection treatment undesirable, in the opinion of many. Although in the hands of some investigators the results seem to have been good, the complications, the difficulty in selecting suitable cases, and the still uncertain percentage of recurrences would seem to make the method unsuitable except under circumstances in which unusually careful technic and suitable care are possible. (J. A. M. A., Oct. 30, 1937, p. 1456.)

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Meeting of October 7, 1937

The stated meeting of the Minneapolis Surgical Society was held Thursday, October 7, 1937, the president, Dr. O. W. Yoerg, in the chair.

The following papers were presented:

TREATMENT OF FRACTURE OF THE PATELLA BY REMOVAL OF THE PATELLA

R. C. WEBB, M.D.

Case Report

DURING this year I have operated upon three patients with fracture of the patella which was unusually severe and out of the ordinary.

Case 1.—In the first case, a man, aged forty-five, had a very markedly comminuted fracture of the left patella with marked separation of the fragments. He was operated upon on January 27, 1937, five days after injury, and the major fragments were drilled and approximated with catgut after suturing the tears in the joint capsule. The fragments were still loose, however, and a purse string of heavy braided silk was passed around the patella at the ligamentous attachments in order to preserve the normal size of the patella. After operation the extremity was kept quiet for four weeks because of the extensive comminution. He was then allowed to move the knee more and more. He steadily improved, but his progress was slow and he had considerable pain in his knee. Three months after operation he was x-rayed by Dr. Allison, and he reported the fragments firmly united in excellent position. Four months after injury he could flex his knee beyond a right angle to seventy degrees, and he could walk normally. His knee cap was still sore, and the knee would become sore if it was kept in one position too long. His knee would become painful when driving an automobile a few miles. He returned to work as a locomotive fireman four and one-half months after injury.

Case 2.—The second case was very similar in that there was an extensively comminuted fracture of the patella with separation of the fragments following an automobile collision. The patient was a man forty-seven years of age who was operated upon in an out-of-town hospital on April 20, 1937, nine days after injury. The lateral capsule was sutured with chromic catgut and two of the largest fragments were drilled and approximated with bronze wire. Two months later he came in for examination. He could extend his knee normally but could flex it only 145 degrees. He continued to improve, and four months after injury he could flex his knee to 90 degrees. He complained of pain across the front of his knee, and at times the pain awakened him at night. It always took him a few minutes to get his knee limbered up when he started to walk. He had been able to work at shocking grain, however, on one occasion, three months after injury. X-ray examination showed the fragments in close approximation. In general, I believe he should be classed as a fairly satisfactory result.

In each of the two above cases with extensive comminution of the patella and tearing of the lateral capsule of the joint, successful effort was made to recon-

struct the patella and obtain a sufficiently strong knee to enable the men to work, in one case as a locomotive fireman and in the second case as a garage worker. The disability was five months in one case and three months in the other. Both men still had complaints in connection with their knees after they returned to work.

At the last previous meeting of this society, Dr. Kenneth Bulkley called attention to the report by Dr. Lister in the *British Medical Journal* of the first operation on a fractured patella in 1877, just sixty years ago. During these sixty years there have been numerous methods published for treatment of the patella itself. All agree on the importance of suturing the tear in the capsule, but they differ in methods of treating the patella. When the fragments fit together snugly after suturing the capsule, some writers advocate no further effort to hold the bone fragments in place.

Usually, however, the writers are apprehensive as to the stability of the fragments, and as they desire early motion, they advocate fixation of the patellar fragments by drilling and fastening them together with various forms of suture material, including wires, fascia and also bone grafts. I think I have used nearly all of the different methods except bone graft, and the results have all been reasonably satisfactory with the exception that the patients do have some joint symptoms, and the disability is variably prolonged depending upon the patient's occupation. Like many others I am interested in any more promising methods.

In the *British Journal of Surgery* in April, 1937, just sixty years after Lister's first report on fracture of the patella, R. Brooke of the Royal West Sussex Hospital, Chichester, advocated the excision of the patella when fractured. He presented a series of thirty cases treated in this manner since 1930. His results were definitely startling and were substantiated by a brief statement by Sir Ernest W. Hey Groves.

Case 3.—My third patient was an Armenian laborer in his late forties. He had sustained a fracture of the patella sixteen days before operation and fifteen days before admission to the hospital. The fracture was transverse and the fragments were separated about one inch as shown in the x-ray. In view of the time elapsed since injury I felt that with the usual type of operation combined with the ordinary period of immobilization after operation there would be a prolonged period of disability and possibly some permanent limitation of motion in the knee joint. At operation the joint was exposed with a curved incision. The patellar fragments were easily shelled out of their aponeurotic covering, the joint was irrigated with normal saline and the quadriceps tendon was sutured with a strip of fascia lata reinforced with interrupted catgut sutures. The skin was closed with fine dermal and a dressing was applied.

No splints were applied. He was returned to bed, and he was allowed to move the knee joint and was

encouraged to do so. The wound was healed at the end of a week and he was allowed up in a chair. At the end of ten days he was walking. The lantern slide shows photographs of him taken on the thirteenth day after operation. He is seen sitting with his

the most important part of the operation of repair and when the fragments of the fractured patella are removed a more close and firm repair can be made.

Discussion

DR. S. H. BAXTER: Is there any material change in the appearance of the knee that would be noticeable afterward?

DR. R. F. MCGANDY: I would like to ask Dr. Webb whether or not this patient experienced pain when kneeling on his knee following this procedure?

DR. JAMES A. JOHNSON: Dr. Webb's presentation of treatment of fracture of the patella was certainly a very interesting and new method. I have never employed it. The patella is not subject to many diseases for which it has to be removed. It occasionally, however, becomes involved with tuberculosis, which has a tendency to become chronic and destroy it.

Many years ago I saw two such cases in which it became necessary to remove the patella completely. Both of these individuals had good results with perfect function of the knee joints. It was not a difficult thing to do and in cases in which there is extreme fragmentation of the patella it would seem to me a logical procedure.

DR. A. W. IDE (by invitation): I saw a young boy not long ago with a congenital absence of the patella. There was very considerable disability resulting from this defect. One might hesitate in doing a complete removal of the patella because of the possibility of resulting disability, although apparently this risk is small.

The operation that Dr. Webb describes is very interesting and no doubt would be useful in some cases. His description suggested the possibility of a partial removal of the patella as described by Blodgett and Fairchild.

I am very sure that these suggestions, both complete and partial removal of the patella, will be very helpful in the treatment of this injury.

DR. WILLARD WHITE: When an individual breaks his patella the so-called capsule or fascia is torn so that the extensor tendon from the rectus femoris muscle can no longer act to extend the leg. It has been demonstrated that integrity of the extensor tendon is the important factor in fractures of the patella and whether or not the fragments have united with firm bony union is relatively unimportant if the fascia and tendon have healed firmly following their suture. Dr. Webb now demonstrates that it is possible to allow a person to return to work in three or four weeks after the removal of the patella. Does it not naturally follow then that a man could return to the same active use of his leg in three or four weeks if the tendon and fascia are repaired even though the patella itself has not yet firmly healed? I believe that it does.

DR. E. C. ROBISHK: I should like to call the attention of the members to an uncommon form of fracture of the patella, a type probably occurring sometime in the practice of each of us, but also probably unrecognized by us. Under the title of "A Hitherto Undescribed Fracture of the Patella," D. M. Meekison of Vancouver, Canada, in the *British Journal of Surgery*, Vol. XXV, No. 97, July, 1937, describes his 3 cases with reports of each. I will show you a slide taken from a picture, in this article, illustrating the patella with a patch of bare bone on the articular surface and the separated fragment. (Shows slide.)

Meekison summarizes his article as follows:

The mechanism seems to be a rather severe injury, in the main consisting of a glancing blow on the patella from the inner side and directed obliquely posteriorly, whereby the inferior and medial corner of the articular



Fig. 1. Photograph of patient with fracture of the patella showing the left knee thirteen days after removal of the patella. The patient was able to extend the knee normally and walk without support and flex the knee as shown here.

knee flexed to less than a right angle to about 75 degrees (Figure 1). At this time he could have returned to any light occupation. He was advised not to return to heavy work, however, until two months after operation in order to allow firm healing of the sutured quadriceps tendon.

Brooke calls attention to the fact that the patella develops behind the quadriceps tendon and not in the tendon and that its development is not in response to a functional need. In the human, the patella is relatively smaller in the adult than in the child. In slow-moving animals the patella is proportionately large, while in rapidly moving animals the patella is relatively small, and the kangaroo with an enormous quadriceps has no patella. Brooke feels that the patella really has a deterrent action on a machine for which it was never designed. In animals now extinct it is relatively larger than in younger members of the same family.

In Brooke's cases he emphasized the rapid and, on the whole, the very complete recovery of function and ability of laboring men to return to full work within four to six weeks after operation. In ten cases in which he tested the strength of the knee extension, he found that in nine of the cases the leg from which the patella had been removed was the stronger.

Brooke's paper was followed by a brief note by Hey Groves in which he said his first reaction was one of frank incredulity. After examining eight of his cases, however, he found that Brooke's claim was fully justified. The quadriceps tendon merely passes over the patella and the upper and lower margins of the patella are covered with fat and give no attachments to any ligamentous fibers. It is the suture of the lateral expansions of the quadriceps tendon which is

surface is knocked out, presumably by the lateral condyle of the femur.

The loose fragment is always found in the lateral pouch, can be palpated and is tender.

X-ray examination, with present technic, does not reveal this fracture.

Convalescence is always prolonged, with the prospect of some slight permanent disability.

The only treatment so far seems to be arthrotomy, repair of the quadriceps expansion, inspection of the fibrocartilage, and removal of the fragment.

DR. R. C. WEBB: There is very little change in the appearance of the knee. The patient is apt not to miss the patella, and when the knee was shown, the examiners were apt not to miss the patella. Although this patient could neither read nor write, he was a very intelligent man who spends his summers in the Rocky Mountains in Montana, and his winters in California. He is now in California, but I have no way of knowing whether he is working in California. Several doctors, including Dr. Yoerg, saw him before he left the hospital at Minneapolis and they agreed that he could return to light work three weeks after the operation.

We all appreciate the value of early motion in fractures of the patella, and we know the dangers of too long immobilization. As a result of my study of Brooke's contribution and my experience with this patient, I am sure that the results in compound fractures of the patella and in certain other cases of fractures of the patella can be improved by excision of the patella and closure of the quadriceps tendon.

TOTAL LEFT PNEUMONECTOMY FOR PRIMARY BRONCHOGENIC CARCINOMA

Case Report

THOMAS J. KINSELLA, M.D.

I AM very sorry that my patient was unable to appear before you this evening but a slight indisposition, unrelated to the present illness, prevented him from making the automobile trip to the city for this meeting.

This man, sixty-one years of age, a hotel keeper and former railroad conductor, first consulted me on June 21, 1937, referred by Dr. E. E. Carpenter of Superior, Wisconsin, because of cough, fever, and loss of weight. He had apparently been perfectly well until the middle of December, 1936, when he developed an acute tonsillitis followed by an arthritis of the right great toe which persisted for two weeks. With this tonsillitis he had a fever to 101 degrees and cough and expectoration of colorless mucoid material amounting to one-half ounce in twenty-four hours. When the acute process subsided, cough and expectoration of clear mucous and slight dyspnea without wheezing persisted. His chest was negative to physical and fluoroscopic examination on January 20, 1937. The cough and expectoration without blood or pus continued with increasing loss of strength and weight which by April totaled twenty-three pounds. X-ray examination at this time revealed an infiltration about the hilum of the left lung. After a period of four weeks treatment at a rest home, he was transferred to the Middle River Sanatorium at Superior, where he remained until June 20, 1937. The cough expectoration and weight loss continued in spite of bed rest until he had lost a total of thirty-three pounds in a period of six months. Repeated sputum examinations by smear and guinea pig inoculations were negative for mycobacterium tuberculosis.

My examination revealed a large, well developed man presenting evidence of marked weight loss. He was troubled by a frequent slight cough with expectoration of clear mucoid material. Physical examination revealed obstructive emphysema of the left upper lobe and roentgen examination showed an increased unfiltration in the left lung as compared with one month previously. Bronchoscopic examination by Dr. L. R. Boies revealed mucoid secretion coming from the upper lobe bronchus but no tumor mass. A diagnosis of obstruction of the left upper lobe bronchus probably due to malignant tumor without evidence of metastasis was made and exploration recommended. A complete x-ray study of the gastro-intestinal tract revealed no evidence of new growth.

The patient was admitted to Northwestern Hospital on July 7, 1937, and left pneumothorax induced as a preliminary to thoractomy. This was continued for a period of ten days and a 50 per cent collapse of the lung obtained. Bronchoscopic examination was repeated in the hope of visualizing a tumor in the upper lobe bronchus and obtaining a biopsy to establish the diagnosis but again there was no mass to be seen. The obstruction of the upper lobe bronchus persisted and the patient continued to run a mild septic type of temperature from secondary infection in the obstructive lobe.

On July 20, 1937, under intra-tracheal cyclopropane anesthesia, administered by Dr. Ralph T. Knight with the patient lying on his back, the left pleural cavity was opened by long transverse incision through the third interspace anteriorly without resection of the rib but with a parasternal section of the third and fourth cartilages and the incision widened by means of a rib spreader. Extensive adhesions encountered anteriorly and medially were divided and a total left pneumonectomy performed according to the Rienhoff technic. The mediastinal pleura was opened and the left pulmonary artery and veins doubly ligated and sectioned in sequence. The left main bronchus was divided, without crushing, about fifteen millimeters from the carina and after section of the cartilages at two points was closed with interrupted silk sutures. The bronchial stump was allowed to retract into the mediastinum and the mediastinal pleura closed over it. The chest incision was then closed tightly without drainage. Intravenous fluid and blood were given during the operation as a precautionary measure but the procedure as a whole was well tolerated and the patient left the operating table with his skin warm, dry and pink and a pulse of 84, respiration of 20, and blood pressure, 124/80. The excised lung revealed a squamous cell carcinoma, which almost completely obliterated the upper lobe bronchus without any projection into the stem bronchus. There was considerable secondary pneumonitis and bronchiectasis distal to the tumor mass. The patient's postoperative condition was relatively uneventful. He remained in an oxygen tent for twenty-four hours and was then removed as there was no evidence of anoxemia. The left pleural cavity rapidly filled with fluid which was not disturbed as no pressure symptoms developed. Subsequent aspiration two weeks after the operation revealed a straw colored clear fluid with a cell count of 200 per cubic millimeter. The wound healed by primary intention, the patient was permitted to get out of bed at the end of two weeks and walked out of the hospital at the end of the fifth week in good condition. His subsequent course has been uneventful. A detailed report will be published at a later date. To our knowledge, this is the first successful total pneumonectomy performed in the state of Minnesota.

Discussion

DR. RALPH T. KNIGHT: This type of operation presents an interesting problem to the anesthetist. The function of the anesthetist, of course, in any procedure,

is to obliterate the function of whatever part of the nervous system it is necessary to put under control, in order that the operation may be done without pain to the patient or impediment to the surgeon. In case of general anesthesia that is most true. The anesthetist is carrying the patient down toward the realms of death, keeping him there and bringing him back. The particular troubles that enter into anesthesia for this sort of operation occur, of course, because the mechanism of the operation interferes with the mechanism of respiration. One of the difficulties in doing an operation of this kind is the interference with the surgical procedure by the heaving motion of the mediastinum which is apt to take place in the effort of the opposite lung to carry on enough ventilation. The respiration must be controlled in some way during anesthesia so that it is kept as quiet as possible and yet that enough effective ventilation is carried on to keep the patient in good condition. The first requisite is answered by inserting a tracheal tube to avoid any possible interference with the passage of gas in and out of the lung. This should be a fairly large and snug tube so that the gas will not escape and so that if necessary, one can control the ventilation by gentle pressure on the bag. In case of total pneumonectomy one doesn't need, and, in fact, one doesn't want a positive pressure, yet there must be perfect control of pressure during the whole procedure. At the time the bronchus is opened it is especially necessary not to have a positive pressure in order that material from the bronchus will not be forced out into the pleural cavity.

In seeking a way to reduce the motion and have as quiet breathing as possible, of course, the question of the agent that is used as an anesthetic is especially uppermost in one's mind. This question is answered very nicely by the use of cyclopropane which allows the administration of a very large proportion of oxygen and therefore allows of perfect oxygenation of the patient with very little ventilation and the necessary motion to go with it.

This patient was anesthetized with cyclopropane. About 5 c.c. of ether was also given in addition to get just enough relaxation to obliterate the throat reflex as well as possible and so to permit easy introduction of the tube. The pharynx was packed to give as tightly closed respiratory circuit as possible. The anesthesia from that point on was carried on with cyclopropane alone. In cases where there is drainage from the lung that is to be removed, the best procedure is to insert the tube not into the trachea but into the bronchus of the opposite lung. That should be sealed off with a balloon around the tube in the bronchus so as to prevent aspiration, into the good lung, of material which is pressed out of the lung which is being removed. The connections of the tracheal tube set-up should be such as to permit easily the use of a suction catheter and that is what was done in this case. We had a specially designed connection between the tracheal tube and the gas machine, devised by Dr. Chas. Adams, so it was easy to insert a catheter down through the tracheal tube and we frequently aspirated whatever secretion there was in the trachea.

The patient remained in very good color and in good condition all the way through. It happens sometimes that at the time of crushing the bronchus there is a considerable vagus reflex which may lower the patient's blood pressure alarmingly just for a brief space of time. It didn't this time. We kept the blood pressure within five or ten points of normal all the time with fluids and blood. The patient went off the table with a blood pressure of 115/75—practically what it was when he went on the table. He was awake by the time he reached his room downstairs.

DR. E. T. BELL (by invitation): My main purpose in being here is to prove that Dr. Kinsella did take

out a lung and that the growth is a carcinoma. There is an ulcerative tumor which obstructs the main bronchus of the left upper lobe. Microscopically it is squamous cell carcinoma.

I am impressed with Dr. Kinsella's modest presentation of a difficult surgical operation. This operation offers us a little hope for a disease that is otherwise 100 per cent fatal. There are many carcinomas of the lung. There are many who think that the increase of carcinoma of the lung is only apparent and that it is due to greater accuracy in clinical and pathological diagnosis, but the European pathological laboratories have all noted this increase, and they have been performing a large number of postmortems for many years. No satisfactory explanation for the greater frequency of carcinoma of the lung has been offered. It may be due in part to the increasing percentage of old people in the population. There are now many more persons over fifty years of age than there were fifty years ago. The majority of pulmonary carcinomas arise near the hilus of the lung, and the surgeon is therefore obliged to remove the entire lung in most instances.

Distant metastases do not form early in the course of carcinoma of the lung but we do not have data as to the frequency of early involvement of the bronchial nodes. It is clearly important to establish the diagnosis as early as possible. Usually this may be done by bronchoscopic examination and biopsy. As to the microscopic structure, somewhat less than one-half of the carcinomas are of the squamous cell type. The others are adenocarcinoma and small cell carcinoma.

DR. OWEN H. WANGENSTEEN: In 1868 Samuel D. Gross visited the surgical clinic of Professor Billroth in Vienna, and upon his return related what heroic operations he had seen Billroth do. What this courageous surgeon might next do, Gross said, would be difficult to foretell—possibly the extirpation of the liver or the stomach. Gross lived long enough to hear of the first successful resection of the stomach for cancer by Billroth in 1881. What Gross would think of some of the modern accomplishments of surgery would be interesting to know.

Dr. Kinsella's case of successful extirpation of the lung for cancer undoubtedly would excite his admiration. In meetings of the American Society for Thoracic Surgery, a favorite subject of discussion for years has been operative attack upon the lung for cancer. As long ago as 1917, Lilienthal removed an entire lung successfully for bronchiectasis. It was not until 1933, however, that Everts Graham had the first success with complete removal of a lung for malignancy. Graham employed the classical posterior approach. Not long after, Rienhoff reported two successes in which he had removed an entire lung through an intercostal muscle incision, employing an approach through the anterior chest wall. Some of the advantages of this method are immediately apparent: there is less trauma and direct access is had upon the pulmonary vessels. At the meeting of the Thoracic Society in May of this year Rienhoff reported several successful instances in which he had divided the operation of pneumonectomy into two stages ligating the pulmonary artery at the first operation; about ten days later the lung was removed.

My associate, Dr. Herbert A. Carlson and I have recently had an experience with pneumonectomy which I should like to discuss briefly. Dr. Carlson will relate the essentials of the case history and findings. It was my plan to employ Rienhoff's proposal of preliminary ligation of the pulmonary artery. Despite the employment of preliminary pneumothorax, the lung was so adherent especially on its hilar surface that by the time the pulmonary artery was uncovered, the major portion of the operation had been done. It was there-

fore deemed best to complete the operative procedure in one sitting. The entire operation lasted two hours and fifteen minutes, of which one hour was concerned in opening the chest and gaining access to the pulmonary root. The pulmonary vessels and bronchus were dealt with in the same manner as Dr. Kinsella described. My case like his concerned the left lung. The patient stood the operative procedure nicely (operation, October 1) and has done well. The highest postoperative temperature was 102.2° F. (rectal temperature) seventy-two hours after operation. The chest was closed tightly with silk ligatures and no drainage was employed. The chest has been aspirated with a needle on a few occasions. When the proof sheets of these notes were reviewed (October 22) the patient's wounds had healed by first intention. Whether the ribs on the left side will have to be removed is not yet apparent.

There are two points bearing upon the operation of pneumonectomy which I would like to mention.

1. By extending and abducting the arm and retracting the latissimus dorsi and teres major muscles with a deep retractor, the wider exposure of the posterior incision is to be gained for the anterior operation. I employed the anterior approach of Rienhoff, making the incision in the second intercostal space. By retracting the flat muscles of the lateral chest wall, I found it easy to extend the incision in the intercostal space, well posteriorly toward the spine. The second, third, fourth, and fifth costal cartilages were divided and a short segment of the rib removed. A self retaining mechanical rib spreader was not necessary. The retraction of the latissimus dorsi and teres major muscles and the posterior extension of the intercostal incision (the patient lying with the operated side tilted up somewhat) afforded surprisingly adequate and satisfactory exposure. I have heard a few surgeons who have done pneumonectomy through an anterior incision say that they would never attempt it again save through the freer though more difficult posterior approach. I believe that the retraction of the lateral flat muscles of the chest wall, here described, will materially facilitate the operation of pneumonectomy by the anterior approach.

2. The matter of dealing with the thorax on the side from which the lung was removed has not yet been definitely settled. In his case Graham did a primary resection of the ribs overlying the operative field. Rienhoff insisted that the organization of the fluid on the operated side, filled the chest and made rib resection unnecessary. Both authors have receded somewhat from their initial stands with reference to this point. As a matter of fact, Graham now supports Rienhoff's initial contention and Rienhoff inclines to the belief that Graham's advocacy of rib removal will be necessary in a number of cases. In instances of pneumonectomy in which persistence of fever indicates the necessity for external drainage and rib removal, extensive rib removal can be accomplished to establish collapse of the chest wall in a very simple way. This method of rib removal I have employed since May of this year in a number of cases of empyema as well as thoracoplasty for tuberculosis. Its performance takes into consideration the direction of insertion of the intercostal muscle bundles. Through a short transverse anterior incision, the rib is cut near the sternum, removing the cartilage in instances of thoracoplasty for tuberculosis. The periosteotome is then pushed along the lower border of the rib, and with elevation of the muscles of the chest wall upon a deep retractor with a narrow blade inserted in the intercostal space, the stripper can be pushed as far posteriorly as the angle of the rib. Three or four ribs are divided anteriorly and dealt with in this fashion. In chronic

empyema, I have divided as many as ten ribs through three short transverse incisions. About a week later through a short vertical incision beside the spine, the same ribs are divided and the intercostal muscle bundles are separated off from the superior border of the rib. With traction upon the rib and a gentle pushing motion with a sponge mounted on a long hemostat, the entire rib is pulled usually with ease through the posterior incision. One great advantage of this method in extensive chronic empyemas is that the thickened parietal pleura need not be excised.

DR. HERBERT A. CARLSON (by invitation): Five years ago I wrote a paper with Dr. Harry Ballou of Montreal on the "Operability of Carcinoma of the Lung." The work was done at Barnes Hospital in St. Louis and it was a very discouraging outlook at that time. It was discouraging for two reasons, one was that the operative work that had been done had been almost entirely unsuccessful. There were only five cases reported in the literature in which the patient had lived more than one year after operation. The other reason it was discouraging was that the autopsy material revealed that most cases at the time of death show wide spread metastasis. There were two cases in which at autopsy no evidence of metastasis, either regional or distant, could be found. When we took this work and showed it to Dr. Graham we were a little surprised that he was so enthusiastic about it. The following April he had a patient, a doctor, with carcinoma of the lung in which he could demonstrate no metastasis. He went ahead and did a total pneumonectomy and as far as I know that was the first successful pneumonectomy for carcinoma of the lung.

Since that time I think I have seen all the cases of carcinoma of the lung which have come to the University Hospital. I cannot say how many there have been but in a four and one-half year period I have seen quite a number and until recently we had not seen a single case which we thought was suitable for exploration. However, we have one patient who came in a few weeks ago presenting a history of pain in the chest since March of this year. At the onset that was his only symptom and he really has had very few symptoms of any kind since. He has had a little loss in weight and a little weakness, no cough, no expectoration, no hemoptysis. We gave him the benefits of gastro-intestinal x-ray, and an intravenous pyelogram, and found no evidence of any other primary carcinoma. Bronchoscopy showed no evidence of any tumor. However, the x-ray picture is characteristic of carcinoma of the lung and the lipiodol filling is practically pathognomonic. There is an obstruction in the anterior inferior branch of the left upper bronchus. We gave him pneumothorax but because of the presence of adhesions it was not possible to collapse the lung as much as one would like. Bronchoscopic examination was repeated after pneumothorax but no tumor could be seen. However, on the basis of x-ray evidence we proceeded and Dr. Wangenstein performed the operation which he described. The entire left lung was removed. The ultimate picture is as you see it here; this operation was performed on October 1st, six days ago. He has fluid on the left, the mediastinum has been pushed over some and for that reason some of the fluid has been aspirated occasionally, but no attempt has been made to remove all of it. The temperature has gone up as high as 102.2 the second day, the pulse has never gone up over 90. His temperature today was 100. As a matter of fact, he had a temperature that high before the operation. He has fibrillation and it has also been noted that changes in position result in considerable change in his blood pressure. If he turns on his back or a little to the right he develops a drop in blood pressure.

THE SURGICAL MANAGEMENT OF DIVERTICULUM OF THE BLADDER

T. L. CHAPMAN, M.D.
Duluth

(by invitation)

THE purpose of this article is to reconsider the methods of surgical procedure advocated for diverticula of the urinary bladder, and to set forward some features of operative technic that are not generally employed, that may add something to the safety of the patient as well as satisfaction to the surgeon.

The locations in the bladder from which diverticula may arise are so varied that many types of approach must be employed. It has been fairly well determined by many excellent studies in the etiology of the disease that it does have necessarily, as an original background, structural defect in the organ. The presence of this imperfection may not result in the formation of a diverticulum, although it may occur, but in general, those usually seen are all found where some degree of obstruction to the bladder, either in it or below it, is found. And while it is well known that diverticula can be almost congenitally forming in a vulnerable district, the case most commonly encountered is in an elderly male with prostatic or other obstructive lesions.

The diagnosis of diverticulum of the bladder will be made but rarely until such symptoms from it have ensued as make it evident that the supervision of stasis, infection locally and from the local depot to the bladder have already occurred. The treatment by any method except radical excision can be at best palliative of but few of its injurious effects, and fewer of its discomforts.

The principles of the operation, of course, in general are the removal of the diverticulum and the closure of its entrance into the bladder, plus the necessity of draining of both the perivesical space and the bladder itself as well for a period. These requirements could be easily met if the lesion most commonly observed were upon the anterior or lateral walls. Unfortunately this is not the case, and the subjects that present the real problem of operative removal are those with perivesiculitis about the region of the diverticulum and thickening and inflexibility of its walls by chronic inflammation and irritation, and possibly also, with calculus formation. If, added to this combination, there is, besides, a very low-lying exit of the diverticulum near one of the ureteral exits, it may be difficult to avoid opening the abdominal cavity and possibly infecting the peritoneal cavity.

A recent survey of the records of the two major hospitals in the city, where my practice lies, made evident a rather remarkable circumstance, namely, that while a diagnosis of diverticulum of the bladder was not uncommonly made and probably correctly, still there were, in more than a six-year period, not more than three or four cases coming to radical operation. It is certain, therefore, that among our own personnel of surgeons at least, either by reason of a lack of agree-

ment with the teaching of practically all authoritative experts that the radical operative removal is the best treatment, or else due to the belief that the operations are particularly difficult technically or extremely dangerous, the responsibility of undertaking these operations is avoided very consistently.

There have been devised by Lower,² Young⁴ van Lerche,³ Judd¹ and others, various ingenious surgical maneuvers and approaches, each one applicable to certain types of the various operative necessities, and each with its need of entire success. The attitude of evasion of operative treatment spoken of is probably based upon the danger of peritonitis in the type of case most commonly seen and technically difficulties, where the diverticulum is old, indurated, situated deeply laterally or posteriorly, and possibly associated with a considerable degree of lower urinary obstruction. Another reason for the uncertainty as to the results of operation lies in the lack of elaboration by most authors, of the technics of approach in the presence of infection. In many textbooks the statements have been repeated that, if possible the operation should be done extraperitoneally, but that this could not be always counted upon. Therefore, it is to this more difficult phase of the operative treatment that major attention will be given.

It is assumed, of course, that before undertaking the operation upon the diverticulum any obstructive influence in its origin or maintenance has been overcome. Whether the operative attack is made first from an intravesical or an extravesical dissection will, of course, depend upon the location of the lesion, its age, lack of elasticity, intensity of infection, etc.; but if the peritoneal barrier to abdominal contamination can be preserved, one major danger of the operation can be overcome.

An entirely possible dissection that would give excellent room and approach to the entire posterior aspect of the bladder was suggested to me some years ago by Dr. J. F. McCarthy of New York and was illustrated by him in several dissections upon the cadaver; and while it was not invariably successful, it did offer a degree of safety that created a hope that with experience and an increase of technical shifts, it might be made nearly perfect. Briefly, the method is to locate, after reaching the bladder, the peritoneal fold and by extreme care dissect it off the whole back and top of the bladder without making any breach in the peritoneal structure. The factors that will make this difficult are: great leanness of the patient and disappearance of the subperitoneal fat, perivesical inflammation, or great loss of elasticity of the bladder wall. However, there is always a cleavage line that can in some manner be utilized. The structure that holds the fundus of the bladder in place is the median umbilical ligament. A dissection that begins without eliminating this ligament is almost certain to fail, but if the beginning of a separation is made upon each side lateral to it, it can be identified and cut and it will greatly aid the ease of progress down the posterior wall.

If there is still an extremely thin and apparently

homogeneous partition, a very useful expedient is to make, with a fairly large syringe and a fine hypodermic needle, a gross edematization of the whole back of the bladder with saline solution. When this is done, a separation can easily be made with dissection scissors and a breach in the peritoneum avoided. This will so mobilize the bladder that all sides and the back may be approached and the identification of the diverticulum made and dealt with in so direct a way that even where the exit of a diverticulum into the bladder is very close to the ureter or even integral with it, that varying shifts of dealing with a possible retransplantation of a ureter by the making of a plastic operation upon it, may be undertaken with confidence. The suture of the bladder wall is made and after removal of the diverticulum at its entrance, it is very necessary that the area outside of the bladder should be drained for some days, and whether or not the bladder is opened from the top, it is still necessary that decompressive drainage of it also must be done.

I offer my apologies for the presentation of a paper like this that involves only technical details, but have done it because this small shift has been a very great satisfaction to me several times and it is hoped that it may be of at least some small help to those of your members who give me the courtesy of this hearing.

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Discussion

DR. C. D. CREEVY: The increase in the frequency with which the diagnosis of vesical diverticulum is made, to which Dr. Chapman has referred, is probably due to the widespread use of excretory urography, and to the increased number of patients with obstruction of the vesical neck who are subjected to cystoscopy in connection with transurethral resection.

Since acquired diverticula are much commoner than the congenital variety, the male, with his liability to obstruction at the vesical neck, has twenty times as many diverticula as the female.

The treatment which is indicated in a given case depends both upon local conditions within the diverticulum, upon complications which it may produce, and upon complications associated with, but not dependent upon, the diverticulum.

Since congenital diverticula are commonly single, have muscle in their walls, and are not usually due to obstruction to urination, they may empty themselves and cause no symptoms until they become infected, either by chance or due to a complicating obstruction. They then require surgical removal.

A diverticulum properly situated may compress the ureter, cause hydronephrosis and so require excision even though causing no local symptoms.

Diverticula which are secondary to prostatic obstruction used to require excision if they were of considerable size and failed to empty, because the relief of the prostatic obstruction was usually done through the open bladder, and one worked to avoid any possible necessity for two major procedures. Now, however, when so many obstructions are relieved by closed or transurethral operation, it is perfectly permissible to relieve the obstruction transurethral and later to decide, on the bases of persisting symptoms, whether diverticulectomy is needed.

DR. W. C. CARROLL, Saint Paul, Minn. (by invitation): I just wanted to say I enjoyed all the papers very much and it is a pleasure to be here.

The cases reported by Doctor Kinsella and Doctor Wagensteen deserve special mention and I feel that they should be highly commended on the results obtained.

Bladder diverticula is a subject which has created considerable discussion as to whether it is necessary to remove all of these diverticula. Doctor Creevy made the statement, and I agree, that if the diverticulum is draining, then, perhaps, it is causing no symptoms and the patient can get along for a time without the operation. The exposure of the posterior bladder wall which is obtained by the technic described by Doctor Chapman certainly is much better than trying to operate blindly and I think the results should be very much better.

DR. T. L. CHAPMAN, Duluth, Minn. (by invitation): I am greatly obliged for your courtesy in listening to such a concentrated technical thing as this. I will run a back-trail and answer the question raised as to what the procedure should be. In general, you will find that if you pursue all the literature there is on the subject of what the procedure should be in those cases in which there are already symptoms from the diverticulum, the first attack must be on the condition that started the diverticulum, which is the obstruction. It has been our own experience that where we just had diverticula which we knew about, and had prostatic or median bar obstruction, we had very, very little luck in letting them alone permanently, except with our very elderly gentlemen. We tried prostatectomy and said nothing, but before very long the patient said a lot. They would be the type of men you would be sure would be empty, and they would get up and walk across the office and presently pass a pint of urine. This is sure to happen in those that have a considerable sized diverticulum or in those that have a comparatively narrow neck to the sack. I think all the authorities agree that if you get symptoms from a diverticulum, the mere removal of obstruction will not of itself drain the diverticulum enough to keep it symptom-free.

As to the little trick of mobilization I spoke of, Dr. Creevy was kind enough to say it probably might be applicable to other lesions. It is. McCarthy showed me also how enormously mobile you could make a bladder by that dissection if it could be carried out. This little adjunct in the decline of mobilization is my own. McCarthy said frankly he could mobilize a bladder only in two cases out of five by careful dissection, yet I have done it three or four times in succession without a technical error by using the edematization.

* * *

The meeting adjourned.

HARVEY NELSON, *Secretary*.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

PHYSICAL THERAPY IN ARTHRITIS. Frank Hammond Krusen, M.D., Associate Professor of Physical Medicine, The Mayo Foundation, University of Minnesota; Head of the Section on Physical Therapy, Mayo Clinic. Foreword by Melvin S. Henderson, M.D. 180 pages. Illus. Price, \$2.25, cloth. New York: Paul B. Hoeber, 1937.

SYNOPSIS OF GENITOURINARY DISEASES. Austin I. Dodson, M.D., F.A.C.S. Professor of Genitourinary Surgery, Medical College of Virginia; Genitourinary Surgeon to the Hospital Division, Medical College of Virginia, et cetera. Second Edition. 294 pages. Illus. Price, \$3.00, flexible binding. St. Louis: C. V. Mosby Co., 1937.

CRIPPLED CHILDREN. Their Treatment and Orthopedic Nursing. Earl D. McBride, B.S., M.D., F.A.C.S. Assistant Professor of Orthopedic Surgery, Univ. of Oklahoma, School of Medicine, et cetera, in collaboration with Winifred R. Sink, A.B., R.N. Educational Director, Grace Hospital School of Nursing, Detroit, Mich., et cetera. Second Edition. 379 pages. Illus. Price, \$3.50, cloth. St. Louis: C. V. Mosby Co., 1937.

METHODS OF TREATMENT. Logan Clendening, M.D. Clinical Professor of Medicine, Medical Dept. of the University of Kansas, et cetera. Sixth Edition. 879 pages. Illus. Price, \$10.00, cloth. St. Louis: C. V. Mosby Co., 1937.

THE MANAGEMENT OF FRACTURES, DISLOCATIONS AND SPRAINS. John Albert Key, B.S., M.D. Clinical Professor of Orthopedic Surgery, Washington University School of Medicine, et cetera., and H. Earle Conwell, M.D., F.A.C.S. Consulting Orthopedic Surgeon to the Tennessee Coal, Iron and Railroad Co., et cetera. Second Edition. 1246 pages. Illus. Price, \$12.50, cloth. St. Louis: C. V. Mosby Co., 1937.

EYESTRAIN AND CONVERGENCE. N. A. Stutterheim, M.D. (Rand). Part-time Ophthalmic Surgeon to the Johannesburg School Clinic, Transvaal Education Department; Late Assistant Eye Clinic, University, Leyden. 89 pages. Illus. Price, 7 shillings, 6 pence, cloth. London: H. K. Lewis & Co. Ltd., 1937.

TWENTY-FIVE YEARS OF HEALTH PROGRESS. A Study of the mortality experience among the Industrial policyholders of the Metropolitan Life Insurance Company, 1911 to 1935. Louis I. Dublin, Ph.D., Third Vice President and Statistician, and Alfred J. Lotka, D.Sc., Assistant Statistician. 611 pages. Cloth. New York: Metropolitan Life Insurance Co., 1937.

MENTAL THERAPY. Studies in Fifty Cases. Louis S. London, M.D. Formerly Past Assistant Surgeon U. S. Public Health Service; Medical Officer U. S. Veterans Bureau; Assistant Physician Central Islip State Hospital, New York, and Manhattan State Hospital, Wards Island, N. Y. 2 Volumes, 774 pages. Price, \$12.50, cloth. New York: Covici-Friede, 1937.

THE 1937 YEAR BOOK OF GENERAL MEDICINE. Edited by George F. Dick, M.D., Lawrason Brown, M.D., George R. Minot, M.D., S.D., F.R.C.P., William B. Castle, M.D., A.M., William D. Stroudn, M.D., and George B. Eusterman, M.D. 832 pages. Illus. Price, \$3.00, cloth. Chicago: Year Book Publishers, 1937.

SYPHILIS. Morris Fishbein, M.D. 70 pages, Illus. Price \$1.00, David McKay Co., Philadelphia, 1937.

Dr. Fishbein, in his usual excellent and facile manner, describes the various phases of syphilis for the layman.

He gives a brief history of the disease, the significance of various serologic tests, and pictorially shows the menace that syphilis is to mankind. I find this an excellent book for any non-medical person interested in the problem of syphilis, except that the author's estimated cost of treatment seems to me misleading.

F. T. BECKER, M.D.

IMMUNOLOGY. Noble Pierce Sherwood, Ph.D., M.D. 608 pages. Illus. St. Louis; Mosby, 1935.

In reading current medical literature, many of us attempt to obtain only the most practical points of the various subjects. We are likely to pay very little attention to the fundamental principles of bio-chemistry and physiology. A thorough review of these principles should be helpful to anyone in the practice of medicine. The subject matter of this book is covered very concisely although it consists of over six hundred pages. Questions concerning suspensions, colloids, hypersensitivity, immunity, et cetera, are answered clearly. Definitions are composed only of essential principles.

The book was written originally for medical students. Because of this, it should be of value to any one of us.

The chapter on colloids is an excellent presentation of the matter. It is located just before the chapter dealing with agglutination, opsonification and complement fixation. This arrangement is necessary because a fair knowledge of colloidal chemistry is necessary to understand the more recent work in immunology.

JOSEPH M. RYAN, M.D.

A TEXTBOOK OF SURGICAL NURSING. By Henry S. Brookes, Jr., M.D. Pp. 636; 233 Illus. \$3.50. St. Louis: The C. V. Mosby Company. 1937.

This is a new book, the purpose of which is "to present the various surgical conditions and methods of surgical and nursing care, and to assist in coördinating the activities of the nurse and the physician (surgeon?) to the best interests of the patient and the mutual satisfaction of the nurse and physician (surgeon?), who are so vitally interested in the welfare of the patient." To do this, an astonishing amount of information has been compressed into a small space. The technical details of equipment, procedures and postoperative care are mostly those in use at Barnes Hospital, St. Louis, where the author is an assistant

surgeon, as well as on the surgical teaching staff at Washington University. The illustrations have been selected with excellent judgment from authentic sources, such as the textbooks of Horsley, Crossen, Hertzler and Chesky and others; many are original.

The plan of the book as set forth above impresses one as being a very good one and well carried out. There is little to criticize and that of an easily remedied nature. Persistently inaccurate is the designation of fracture of the distal end of the radius as "Colle's" in the legend on page 532, in the glossary on page 612 and in the index. It was Abraham Colles, the distinguished Irish surgeon, who first decribed this fracture with its typical deformity, and therefore it is Colles' fracture or nothing. And we hope to live long enough to see the common diverticula of the pharynx taken from the esophagus in the textbooks and placed where they belong.

G. C.

DR. COLWELL'S DAILY LOG FOR PHYSICIANS.
Champaign, Illinois: Colwell Publishing Company.
Price, \$6.00.

The physician who does not use a double entry bookkeeping system will find in Dr. Colwell's Daily Log a convenient day book for keeping additional records of deductible items incident to professional expense, taxes, interest paid and contributions which will make easy at the end of each year the filling out of income tax reports. The log is revised from time to time to keep it up to date, and the 1938 volume provides for Social Security records. The volume can be highly recommended.

C. B. D.

THE CITADEL. A. J. Cronin. Boston: Little, Brown & Co., 1937.

The Citadel is a novel of the present day depicting the professional career of an English physician. Fresh from medical school he begins practice, full of medical ideals, as a panel surgeon in a mining community in Wales. His lack of hospital and laboratory facilities does not detract from the thrill derived from his correct diagnoses and the feeling that he is actually of service to the poor community. As he attains his degree from the College of Physicians and obtains a more lucrative practice, financial considerations lead him to forget the high principles of his profession. Splitting fees leads to the loss of a friend at the hands of a poor surgeon and a sudden realization of how far he has departed from his ideals. This has led to

an estrangement with his wife who has seen how far he has strayed from the straight and narrow path. The happiness of reconciliation with his wife and a fresh start is suddenly terminated by his wife's accidental death.

A shot is taken by the author at the smugness of the English medical profession at its refusal to recognize the work of a scientist not in the regular ranks.

The character portrayal throughout is good and the reader follows the professional and spiritual development of Dr. Manson with keen interest. The author obviously knows English practice and does not hesitate to lay bare some of the humbug and faddism which evidently exists in England as well as in our own country. The picture portrayed of the life and practice of the panel doctor is anything but attractive.

C. B. D.

PSYCHIATRIC NURSING. William S. Sadler, M.D., Chief Psychiatrist and Director, The Chicago Institute of Research and Diagnosis; Consulting Psychiatrist to Columbus Hospital, in collaboration with Lena K. Sadler, M.D., and Anna B. Kellogg, R.N. Cloth. Price \$2.75. Pp. 433, with 19 illustrations. St. Louis: The C. V. Mosby Company, 1937.

Since the World War more and more interest and attention are being given to the mentally sick. The State Board of Registered Nurses, realizing the importance of psychiatric nursing, is requiring a certain number of hours in psychiatric training. The medical profession is beginning to appreciate that every person ill with either a medical or a surgical condition has psychologic complications and needs psychiatric ministrations.

The textbooks on psychiatric nursing heretofore have been too abbreviated and failed to emphasize sufficiently the ways and means of handling the various types of neuroses and borderline cases. This book has been written clearly and from a broad and eclectic standpoint. In Part I there is an excellent introduction to psychiatry and a comprehensive view of the approach to mental hygiene. Part II discusses human personality together with the nursing management of the various types of psychoneuroses. Part III amply discusses the nursing of psychoses, a subject which in other texts on psychiatric nursing occupies most of the space. Part IV discusses psychotherapeutic treatment with many illustrations demonstrating physical therapy.

The book cannot be too highly recommended to nurses as well as to general practitioners.

N. J. BERKWITZ, M.D.

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